

**AGRARIAN CRISIS AND FARMERS' SUICIDES: A STUDY OF
THREE DISTRICTS IN ANDHRA PRADESH**

**A Thesis Submitted to the University of Hyderabad
for the Award of the Degree of
DOCTOR OF PHILOSOPHY**

By

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DECLARATION

I hereby declare that the work embodied in this thesis entitled “**Agrarian Crisis and Farmers’ Suicides: A Study of Three Districts in Andhra Pradesh**”, carried out by me under supervision of **Professor G. Nancharaiah**, Professor of Economics, School of Economics, University of Hyderabad, is original and this had not been submitted for any degree either in part or in full to any other university or to this university.

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CERTIFICATE

This is to certify that the research work compiled in this thesis entitled “**Agrarian Crisis and Farmer Suicides: A Study of Three Districts in Andhra Pradesh**” has carried out by Mr. Jagadeesh Gontupulugu, in fulfillment of the requirement for the award of the degree of Doctor of Philosophy in Economics under my supervision. This thesis or a part thereof has not been submitted for any other degree at this University or any other University to the best of my knowledge.

Place: Hyderabad

Date: 28-06-2013

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CHAPTER-I

INTRODUCTION

1.1: Introduction:

Agriculture is one of the most prominent and inseparable sectors of the Indian economy. Agriculture has got a prime role in Indian economy. Though the share of agriculture in national income has come down, still it has a substantial share in GDP. The contributory share of agriculture in Gross Domestic Product was 57.7 per cent in 1950-51, 52 per cent in 1960-61 and is reduced to 18.5 per cent only in 2007-08. We notice agricultural activities in about 43 per cent of India's total geographical area. The share of the agricultural sector's capital formation in GDP declined from 2.2 per cent in the late 1990s to 1.9 per cent in 2007-08. Agriculture sector, at present, provides livelihood to 65 to 70 per cent of the total population¹. The sector provides employment to 58.4 per cent of country's work force and is the single largest private sector occupation. India's foreign trade is deeply associated with agriculture sector. Agriculture accounts for about 14.7 per cent of the total export earnings².

In order to understand the post-Independence history of Indian agriculture has four broad periods³

1. Post independence period or pre-green revolution period from 1949-50 to 1964-65
2. Green revolution period from 1965-66 to 1979-80
3. Period of wider dissemination of technology or maturing stages of green revolution from 1980-81 to 1990-91
4. Post reform period from 1991-92 to 2008-2009.

The agrarian structure at the time of independence was characterized by the existence of a large number of intermediaries between the government and the cultivators, insecurity of tenure in the absence of ownership rights, rent rights, small and fragmented holdings and uneven distribution of land. Such an agrarian structure

was defective and it acted as an obstacle to agricultural development. It did not provide any incentive for improvement in agriculture. It created a class of parasites in agricultural sector. It was highly exploitative as tenants were exploited by landlords⁴. Land reforms are introduced in India in the first five years plan itself to change the defective agrarian structure so as to make it congenial to agricultural development as well as to protect the interests of the tenants and the small cultivators and to provide equal opportunities to all segments of the agricultural sector. The land reforms program therefore, an instrument of both agricultural and overall economic development as well as social upliftment. Land reforms were undertaken with great enthusiasm in the country. The planners wanted to change the face of rural India overnight. It raised many hopes in the country. Soon the enthusiasm was lost and the implementations of land reforms became a very tame affair. The progress of land reforms, in fact has been very tardy⁵.

From mid- sixties, Indian agriculture got exposed to new technology. New technology refers to use of high yielding variety of seeds, application of pesticides, chemical fertilizers and mechanization of agricultural operations. States like Punjab, Haryana, some parts of Andhra Pradesh, Tamilnadu, and Uttar Pradesh, where there was an assured source of irrigation facilities, adapted new technology. The usage of technology that ushered in green revolution in our country increased the cultivated and irrigated area of India, which was about 25 per cent in 1981-82 to 35 per cent by the end of 1991-92 agriculture year⁶.

Constant and consistent use of new technology, in the post-green revolution resulted in tremendous increase in the agricultural production particularly in the food production. Food production, which was 82 million tons in 1960-61, rose to 108.4 million tons in 1970-71. This upward trend further increased the food production to 129.4 million tons in 1980-81, 176.4 million tons in 1990-91 and 192 million tons in 1996-97. As far as yield is concerned, the productivity per hector of all food grains has increased to 1,793 kilograms in 2001-02 from 710 kilograms in 1960-61. Till the mid-sixties the main sources of output growth of agriculture was the increase in the area under cultivation. One of the main contributions of new seed-fertilizer

technology was that of growth in yields. This positive trend became one of the the dominant sources of the growth after 1966-67⁷. By the eighties, this yield growth rates accounted for as much as 80 per cent of the growth of the total crop output. Though praise worthy, unfortunately the benefits of the green revolution did not reach the deserving. Mostly the rich farmers cornered and enjoyed the fruits, benefits and advantages. This was so because the income of the large holdings increased to more than proportionally with the increase in the farm size due to their greater access to modern farm inputs. The research finding, many experts' studies and resultant pointed out that the small-marginal farmers could not enjoy not only because of limited spread but also of the inability to access the recourses available and required⁸.

The next phase of Indian agriculture began in the early 1980s. Agriculture growth accompanied by increase in real farm income led to the appearance of interest groups and lobbies, which started influencing the farm polices of the country. There has been significant increase in subsidies and support system to the agriculture development during this period⁹. While the public sector spending in agriculture over infrastructure development started showing a turndown in real term, investment by farmers was experiencing an upward trend. The output growth, which was concentrated in very narrow pockets, became somewhat broad-based and attained impetus. The rural economy started witnessing a process of diversification, which led to growth in non-food grains output like milk, poultry, vegetable, fruits, etc. This accelerated largely market driven growth in agricultural GDP which sustained till the initial years of 1990s. Undoubtedly such an accelerated production and growth in agricultural sector owes a great deal of indebtedness to new technology. Therefore this period could be termed as a period of wider dissemination of technology¹⁰.

Simultaneously the ugly side of apparently farmer friendly green revolution began to see the light. The free spread of green revolution through high yielding varieties of food crops was showing clear signs of adverse effects of soil degradation, water pollution and deceleration in growth rate of productivity. On the other hand, there remained, vast rain fed and drought prone area inhabited by relatively resource poor farmers who required improved appropriate cropping strategies. Hence, one

could comfortably conclude that the green revolution technology evolved could exclusively suit only an irrigated agro ecological system only to a certain extent. When extended to rain fed and drought prone agro ecological regions as well¹¹ we could not reap the expected and desired results. It may not be out of place to claim that the spread of lagged green revolution to semi-arid area, to non-food crops and upwardly mobile medium, small and marginal farmers coincide with a number of technological and institutional changes that brought farming community into a vortex of growing vulnerability¹². By the late 1980s, after exhausting the initial productivity gains, all that green revolution technology left in better resource endowed areas was plateauing of productivity with much of degradation of soil, and water pollution. In the resource poor areas spread of inappropriate technology resulted in unprecedented risk for the farmers. Therefore, the eager late entry of small-marginal farmers in better resource endowed areas and that of entire farming community in rain fed or dry region into the mould of the so-called lagged green revolution was a potential disaster¹³.

The policies of the central government since the beginning of the 1990s have had direct and indirect effects on farmers' welfare that have been generally adverse. The economic reforms did not include any specific package specially designed for agriculture. Rather, the presumption was that freeing agricultural markets and liberalizing external trade in agricultural commodities would provide price incentives. Underlying assumption was that such initiative would lead to enhanced investment and output in that sector, while broader trade liberalization would shift inter-sectoral terms of trade in favor of agriculture. Unfortunately, that remained as a dream. As if it were not enough changes in patterns of government spending and financial measures, affected the conditions of cultivation. In particular, fiscal policies of reducing expenditure on certain areas especially rural spending, trade liberalization, financial liberalization and privatization of important areas of economic activity and service provision had adverse impact on cultivation and rural living conditions¹⁴.

The impact of trade liberalization brought in volatile prices, problems in imports and exports and greatly crippled farmers' welfare, livelihood and other

employment opportunities. Perhaps the single most adverse effect that has become a curse to the farmers is the combination of low prices and output volatility for cash crops. No doubt with new seeds and other inputs, output volatility has increased beyond measures especially due to weakening in the prices of most non-food grain crops such as those of cotton and oilseeds. This phenomenon has not only plummeted the prices but also prolonged such falls. Hence, both the domestic demand conditions and the growing role played by international prices could not consequent upon greater integration with world markets in this sector. These unpredictable but for sure certain features in turn left with growing material distress among cultivators. In a closed economy, lower output is normally accompanied by some price increase. Therefore, coincidence of lower production with lower terms of trade was very rare until recently. However, thanks to trade liberalization, the pattern of lower prices accompanying relatively lower output has become norm of the growing integration of Indian agriculture with world markets. This process has gained momentum due to both compelled exports and imports of agricultural products as a result of memorandum of understanding with World Trade Organization (WTO). Progressively freed, international price movements have begun to have a say and sway over domestic trends. This trend has gained footing in the Indian domestic market from 1996 onwards as the stagnation or decline in the international prices of many agricultural commodities have started to plummet. This very same trend has continued despite local declines in production. This was not always because of actual imports into the country: the point about openness is that the possibility of imports or exports can be enough to affect domestic prices at the margin. However, imports also did increase. The combination of liberalized trade and reduced protection of other kinds certainly led to increased levels of exports and imports of agricultural commodities¹⁵. In addition to this, there has been a distinct slowdown in agricultural growth since the mid-1990s which has adversely impacted the livelihood base of the farming community at large. A large number of proximate and structural factors have contributed to the decline of agriculture. The foremost among them is the reduced developmental role of the state in investment in irrigation, flood control, research, extension, and institutional building in the context of liberalization in agriculture¹⁶.

Such governmental apathy and exploitative globalized market strategies turned out to be the nooses of the farmers and agriculture dependent farm labourers.

Since agriculture is one of the main economic components of India, the government of India through the Ministry of Finance and Agriculture decided to address the issue of Agricultural Crisis on an emergency basis. Ministry of Finance and Agriculture after prolonged deliberations decided to constitute Expertise Committee to have in-depth study on the agrarian crisis. Under the chairmanship of R. Radha Krishna, Government of India constituted an expert committee to have an in-depth study on agriculture indebtedness. They said, “There are twin dimensions to this crisis. One is that which threatens the livelihood of those dependent on agriculture, particularly the small and marginal farmers and landless agricultural laboures. The second one is agricultural developmental crisis that manifests through a deceleration of productivity and declining which can be attributed to the neglect in the designing of programme and in the allocation of resources towards agriculture”¹⁷.

The report of the Expert Group on Agricultural Indebtedness appointed by the Ministry of Finance claims that “Indian agriculture is currently passing through a period of severe crisis”. The expert team having expressed the above opinion on agricultural crisis affirmed and confirmed the widespread belief that India agriculture sector and people who depend on it for livelihood are at the cross roads. Although some features of the crisis started manifesting themselves in certain parts of India during the late 1980s, the crisis has assumed a serious dimension since the middle of the 1990s. One of the tragic manifestations of the crisis is the large number of suicides committed by the farmers in some parts of India ¹⁸.

According to the official statistics, there were 8900 suicides by the farmers alone between 2001 and 2006 in four states of India viz., Andhra Pradesh, Karnataka, Kerala and Maharashtra. Studies on farmers’ suicides at national and international level have pointed out that several structural and social factors are responsible for the pathetic situation. It includes the factors such as the changed pattern of land holdings, changed cropping pattern from food grains to cash crops, liberalization policies,

which are market and corporate friendly not farmer friendly. Which prematurely pushed Indian agriculture in to the hands of global market without a level playing field. Such blind policies have resulted in heavy dependence on high cost paid out inputs, market vagaries, lack of remunerative prices, indebtedness, neglect of agriculture on policy front, decline in public investment; break up of joint families and individualization of agricultural operations. Such adverse results have an equal responsibility for the farm distress. The research findings, many expert studies and resultant reports pointed out that the agrarian distress is the resultant outcome of the farmer unfriendly policies pursued by the government for the last two decades at the central and state level as well¹⁹.

The first incidence of farmers' suicide was reported in 1986 in Kerala. This was a Rubber growing farmer. Not only the incidence was neglected by the state government but also was brushed aside as a freak accident. But the fact of the matter was: this suicide was result of forced monoculturization of agriculture in Kerala. Kerala was known for multi crop system. Though concentrated on cash crops, Keralites always cultivated more than one cash crop like, coconut, tapioca, and banana etc. Monoculturization of agriculture not only spoiled land fertility but also brought in ecological imbalance. Hence, crop yields reduced and returns on investments was very poor. And also the implementation of the trade liberalization after 1991 took the lives of farmers in the state of Kerala. The state farmers could not be able to survive in the uncertain nature of international market and hence were trapped into an economic hardship. Therefore more number of farmers landed in debt traps which forced them to end their lives through suicides. Like a contagious disease during the 1990s, this unfortunate unhealthy trend resulted in the spate of farmers' suicides both in north and south Karnataka, Andhra Pradesh, Maharashtra and Punjab. Interestingly, most of these farmers were cotton growers²⁰. There are regional differences found in the causes of farmers suicides. Each of the state has a different characteristic of the phenomenon. Though, the indebtedness is a root causes of suicides, the reasons behind it are different in each state. In Maharashtra, lack of irrigation facilities, drying up of institutional credit and price volatility of Cotton were found responsible for suicides by farmers. In Karnataka the incidences of farmers'

suicides are found concentrated in the Northern Region. This is characterized as dry land farming. Farmers of the region have to face difficulties to cultivate new varieties of seeds. As a result, there is a decline in productivity and thereby production and income from agriculture. The cost of cultivation has been continuously on the rise and returns have been decelerated. Further it leads to the indebtedness and the distress act of suicide in the state of Karnataka. And in Punjab, the increase in consumption or non agricultural expenditure has been at the root of the agrarian crisis. Also the crisis is saturated only among the cash crop growers i.e. Cotton, Chilies, Groundnut, Rubber, etc. It is an indisputable fact that the growing incidences of farmers' suicides were found particularly after the introduction of the New Economic Policy in the country²¹.

Given this all-Indian poor alarming agriculture scenario, let us have a glimpse of Andhra Pradesh agriculture too. We shall try to see the changes that have been taking place in Andhra Pradesh agricultural sector and such influence on the farmers. Andhra Pradesh is the fifth largest state in the country, both in terms of geographical area 27.4 million hectares and population 75.7 million. The growth performance over the decades, excepts in 1980 continues to be below the national average and the per capita GSDP of the state even in 2000-01 remained at Rs10, 195 (at 1993-94 prices), which was less than the national average of Rs.10.313. though the state claimed as a leading reform state in 1990s, the rate of growth acutely decelerated to 5.37 per cent which was much below the nation average of 6.13per cent²².

The agrarian economy in Andhra Pradesh, as in the rest of India, is diverse and built on regional variations. In addition to this, the green revolution in the state was confined to resource rich areas. Green revolution had bypassed vast dry land areas mostly located in Telangana and Rayalaseema regions; this led to increase in regional and social disparities²³.The agrarian structure of the state undergone considerably change during the last five decades. In order to understand this, Andhra Pradesh agriculture sector has four significant phases.

Andhra Pradesh has attained a significant acceleration in agricultural growth in the first phase of green revolution, in comparison with the pre-green revolution period. The growth rates of aggregate output accelerated drastically from 1.0 per cent in 1957-58 to 1969-70 to 3.5 per cent per annum in 1970-71 to 1979-80. This high acceleration was attributed mainly to the good performance of all food grains crops. While food grains attained high growth, the performance of non-food crops, is not satisfactory excepts cotton. However, the high growth rates of cotton enable the output of non-food grains to maintain a stable growth of 2.8 per cent in both the period²⁴.

The second phase of green revolution has maintained the growth rate attained in the first phase. This achievement is not due to the continuation of growth in the yield of various crops attained in the previous period, but due to shift in the cropping pattern from low valued coarsecereals to high valued crops like oilseeds, cotton and pulses. Due to these shifts in area from food grains to commercial crops, the growth rate of cereals output decelerated from 3.6 to 2.2 per cent per annum while the growth rate of non-food grains output accelerated from 2.8 per cent in 1978-79 to 5.0 per cent in 1998-99. The yield growth rates of food grains also decelerated steeply. Only the rice experienced acceleration in the growth rate of yield from 2.50 per cent to 3.05 per cent during the same period. But the slowdown in growth of paddy area has led to the deceleration in output from 3.58 per cent in seventies to 3.31 per cent per annum in the eighties²⁵. Thus the decade of eighties is not a period of accelerated and broad-based growth for Andhra Pradesh; it is a period of shifts in cropping pattern from low vale crops to high valued crops.

The Andhra Pradesh agricultural sector has undergone significant changes in the nineties due to the introduction of new economic reform. These changes are more particularly in the cropping pattern, production and productivity. Area under total food grains decelerated substantially during the post-reform period and recorded - 1.42 per cent of growth, it was mostly due to steep decline in area under coarse grains (-2.38 per cent). During the post reform period, area under non-food grains has

increased and registered to 0.44 per cent of growth²⁶. Due to increase in yield rates of major crops like chilies, cotton attained positive growth rates²⁷.

Further, Andhra Pradesh happened to be a forerunner of neo-liberal reforms. Earlier government vigorously and religiously implemented those reforms at the cost of agriculture. As a result two important changes simultaneously began to affect the sector: shrinking role of government in agriculture and increased exposure of the farmer community to the greedy markets. Such a development and unstudied reforms pushed the agricultural sector to the brink and made a puppet in the hands of the global markets. It was argued that these reforms pushed the agricultural sector and especially the dry land regions into crisis. The crisis manifested itself in an extreme form of farmers' suicides²⁸.

Then onwards Andhra Pradesh has been a leading state in the incidence of farmer's suicides. The suicides of farmers in the state can be better understood in phases. Mid-eighties (1986-87) can be called the first phase. In the first phase mainly the farmers who were cotton crop growers and mostly belonged to Prakasam district committed suicides. The second phase started in the mid nineties (1997-98) beginning with Warangal district, later spread to other districts of north Telangana with suicides by the cotton farmers. Around this, time a few districts in Rayalaseema too began to experience farmers suicides, especially in Anantapur. The most recent suicides, which took place in the entire state did not confine to one single crop. Suicides of farmers spread out the spectrum of various crops, which signified distress in the entire agricultural system²⁹.

It is worthy to note that the suicides in the state have mostly happened in the dry tracts of Rayalaseema and Telangana³⁰. In addition, the shift in cropping pattern from food to non-food crops and inability of state to provide adequate extension support to match the need in raising commercial crops are found to be correlated with the incidence of suicides³¹. Further reduced public investment in agriculture resulted in decline in area under surface irrigation, decrease of area under tanks and increase under well irrigation resulted in over-exploitation of groundwater which became a

heavy burden on the fragile resource regions³². There has been a heavy burden on the fragile resource of irrigation to wells in Telangana and Rayalaseema regions. The entire growth in ground water sources occurred due to private investment borrowed at high cost from informal sources, leading to high levels of indebtedness and suicides³³.

The cost of inputs like the seed, fertilizer, pesticides and labour has gone up due to trade liberalization. The quality of these inputs was at risk, as the state did not regulate the respective markets effectively. Under the liberalized trade regime, a number of items were transferred from restricted to open general license system. Resulting in cheaper imports and subjecting domestic prices, especially of oil seeds, coffee and pepper to fluctuations. This led to suicides in Rayalaseema region, where the groundnut crop is predominantly grown³⁴.

Some of the early studies on suicides by cotton farmers concluded that factors contributing to crisis range from the most proximate like socio-psychological attitudes to macro policy shifts and structural transformation taking place in agriculture as well as changes at the household levels. Also the on-going process of alienation from the family and society, and the loss of collective institutions had aggravated the crisis situation³⁵. Majority of farmers who committed suicides belonged to the relatively younger age groups, were predominantly male farmers, who belonged to the caste categories of Scheduled Caste and Other Backward Caste and among them who belonged to a new generation of farmers who took up farming for the first time³⁶. Besides, these changes at the household level due to policy shifts also increased aspiration for economic and upward social mobility, which were manifested in and through higher expenditure on education, and health contributed to suicides³⁷. Marriage of Daughters; Educational needs of Sons and Health needs of whole family members emerged as trigger factors for suicides³⁸.

From the existing literature, we can identify three sets of causative factors of farmer's suicides. One set of factors directly has link to the global changes and macro policy shifts. The second set has some bearing on the structural transformation-taking place in the agricultural sector. The third set has association with the changes at the

household level. These factors at the three levels reinforce each other leading to differential impacts based on differential levels of development. Thus, the transformation that had taken place over a period from a diverse agricultural system into a standardized market defined system led to individualization of farmers³⁹.

On the eve of the 2004 state assemble election, the congress government took full advantage of the unhappiness among farming community and the rural poor in its campaign investment in irrigation, farm debt relief, free power to agriculture, subsidized interest for women SHG, Land distribution to the schedule caste and schedule tribes, and the promise a legislation to guarantee right to work were brought on to the agenda of congress party political campaign. When the congress came to power , it put in action initiatives like setting of the AP commission for farmers welfare, launching of a massive irrigation development programme, free power to agriculture, the‘Pavala Vaddi (3 per cent interest) loans to the SHGs, Indira Awas Yojana (housing programme for rural poor)and, NREGS Programmers⁴⁰. Eventhough, government implemented such a programs to overcome agrarian distress and to prevent farmer’s suicides in Andhra Pradesh. More or less same farmer’s suicides trend continued. There are 1489 farmers’ suicides between 2006 to 2009⁴¹. Keeping in mind the above state of affairs in the rural economy of Andhra Pradesh the present study examines factors underlying farmer’s suicides in Andhra Pradesh

1.2: Problem of Study:

In general, the farmers’ suicides are associated only with cotton growers, because of crop failure for the past two decades. Nevertheless, the fact is that the crisis is not only limited to cotton growers but also applies to other commercial crop growers such as chilly and groundnut. At the outset if one were to fathom the crisis, he or she is lost. For the simple reason that the factors contributing to such a crisis are too many and too little attention is paid. Hence, such factors are being accumulated over the period. Therefore, this research attempts to comprehend the problems faced by farming community in the selected districts of Andhra Pradesh. The study tries its best to focus on the issues such as, factors underlying farmer’s suicides in Andhra

Pradesh with references to selected districts in the three regions. Having gathered required and sufficient information, a comparative analysis of inter-district and intra-district causes for farmers' suicides in three regions of Andhra Pradesh was carried out systematically. Also an attempt was made to provide contrasting and comparative analysis of non-suicide cases in Andhra Pradesh. Further, the research also reviewed critically various government policies and programs implemented to resolve this crisis. As a conclusion, the research study envisaged to develop and suggest alternative farmer friendly sustainable policy framework for implementation at administrative and peasant level.

1.3: Objectives of Study:

Given the elucidation of the background in this chapter/section, the broader objective of the research is to find out the causes of the suicides among the farmers in the current agrarian distress of Andhra Pradesh. The specific objectives of the research are as follows

1. To study the overall situation of Andhra Pradesh agriculture and farmers in terms of Landholding Position and Cropping Pattern with a view to link them to suicide deaths.
2. To examines the magnitude, trend and spatial pattern of farmers' suicide in India and Andhra Pradesh.
3. To unearth the factors underlying farmer's suicides in Andhra Pradesh with reference to selected districts in the three regions; and compare and analyse inter-district and intra-district causes of farmers' suicides in the three regions; and also provide a comparative analysis of suicide with non-suicide in Andhra Pradesh.
4. To review critically various government policies framed and implemented to resolve this crisis and eventually to develop and suggest alternative policy framework that is farmer friendly and easily implementable at the administrative and peasant level.

1.4: Hypothesis:

1. Low productivity and production during the post reform period also influence the farmers' suicide.
2. Oppressive and exploitative socio-economic factors that force the farmers to commit suicide among all selected districts.

1.5: Source of Data and Methodology:

1.5.1: Selection of the Districts:

Three districts like Guntur district from Coastal region, Warangal district from Telangana region, Anantapur district from Rayalaseema region have been selected for this study based on high number of suicides occurred. These three districts will also cover all the political sub-regions of Andhra Pradesh based on the reported cases of suicides. Moreover, we can also provide space for regional factors. We hope to collect the regional level factors, which prompted farmers to suicides. Specific villages were selected based on the list of suicides cases from 2007 to 2009 provided by the Government of Andhra Pradesh.

1.5.2: Collection of Data:

Collection of data was held in the selected villages. To provide objectivity and authenticity we tried to have data from the primary as well as the secondary sources. Primary sources were generated from the field and the affected farmers' families, while the secondary sources were drawn from the available documents. The main sources of secondary data are as follows: Census of India, 2001, National Crime Records Bureau, National Sample Survey, Bureau of Economic and Statistical, Andhra Pradesh, Statistical Abstracts-Andhra Pradesh, Revenue Department, Government of Andhra Pradesh and News paper reports on farmers' suicides.

From the above sources, required information was gathered. Having gathered required information, a macro context was developed which was attributed to Andhra Pradesh. We tried to identify the level of drought proneness in various regions of

Andhra Pradesh, and examined the trends in overall suicides rates vis-à-vis farmers' suicides rates. This information was helpful to us to draw a representative sample from the selected suicides cases for generating primary data.

Primary data for the study was collected from in-depth study of three district of Andhra Pradesh. The primary data mainly was generated by means of scientific questionnaire, which was carefully designed, and standardized. The questionnaire has: Interview schedule for close kin of the suicide victim. For evaluating the specific objectives of the study, necessary primary data was obtained from the 129 selected families where suicides occurred during 2007 to 2009 from 112 villages of three regions of Andhra Pradesh, through personal interviews with the help of a well-structured schedule. We confined to the collection of data pertaining to the 2010-2011 agricultural year. The data collected from the respondents includes general information about suicide farmers, their resource position, land holding, cropping pattern, debt condition, asset position, sources of credit, purpose of credit, mental status of person, addictions, if any, reasons for suicide and any other information family wishes to share. Further, the study also provided comparison of farmers' suicides with non- suicides in Andhra Pradesh. We identified if at all there were to exist some non- suicides households that are similar to the suicides families in the village in term of landholdings and other assets. This particular information was obtained from the village sarpanch, village revenue officers and elders of the village. For an objective analysis, we also used data collected from 87 non-suicide families from 87 villages. The entire suicides could be classified into five set of households based on their landholding size.

1. **Household Set.1:** Marginal farmers are those who have landholding of less than one hectares.
2. **Household Set.2:** Small farmers are defined as above one hector but below two hectares.
3. **Household Set.3:** Semi-medium farmers are above two hectares but below 4 hectares
4. **Household Set.4:** Medium farmers are above 4 hectare but below 8 hectares.

5. **Household Set.5:** Large farmers are 8 hectares and above.

Again, the farmers are classified based on ownership into the following categories:

1. Pure tenant
2. Pure owner
3. Owner cum tenant

1.5.3: Tools and Techniques:

The collected data was tabulated and consequently simple percentage and average was calculated to get the result. To measure the inequalities in the distribution of landed property among different households irrespective of Gini's coefficient ratio was also calculated.

$$C = 1 - \left[\sum (P_t - P_{t-1}) (Q_t + Q_{t-1}) \right]$$

Where, C = Gini's coefficient of concentration

P_t and Q_t are Cumulative proportions of number of operational holdings and are operated up to the J^{th} size class of holdings, and \sum denotes summation over the size classes

In order to observe the performance of agriculture at regional/state level growth rates were computed according to the following formula,

$$P_t = P_0(1+r)^n \Rightarrow P_t/P_0 = (1+r)^n$$

$$1+r = (P_t/P_0)^{1/n}$$

$$r = \left[(P_t/P_0)^{1/n} - 1 \right]$$

Where P_t = Current year value

P_0 = Initial year value

r = Compound growth rate

n = Number of years

To measure the instability variations of selected crops, we first computed average annual percentages, changes in crop output, productivity and area, and then estimated standard deviation in such changes.

1.5.4: Primary Data:

*Logistic Model*⁴²

Logistic regression model was used to examine the influence of different factors, namely, size of the landholding (SL), Family size (SF), Total indebtedness (TI), Total expenditure (TE), per hector expenditure (PHE), Value of livestock in rupees (LSV).. The influence of various socio-economic factors on the probability of incidence of suicide was investigated through LOGIT Model. The dependent variable (probability of incidence of suicide) was expected to lie between 0 and 1.00. In the present study suicide farmers and non-suicide farmers made the dependent variable discreet. Thus, the multivariate Logit model was useful for the analysis. The logit model assumes that the probability of an individual, i, being committed suicide has the form as:

$$P_i = P(Y_i = 1/X_i) = e^{X_i\beta} / (1 + e^{X_i\beta}) \quad (1)$$

Where X_i is the set of explanatory variables that include individual characteristics and β is the set of unknown parameters. Similarly, the probability of an individual not committing suicide as:

$$1 - P_i = P(Y_i = 0/X_i) = \frac{1}{(1+e^{X_i\beta})} \quad (2)$$

Taking the ratio of the two expressions we get

$$\frac{P(Y_i=1)}{P(Y_i=0)} = e^{X_i\beta} \quad (3)$$

Taking the natural log of both sides we get the equation as:

$$\text{Ln} \left[\frac{P_i}{(1-P_i)} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \dots \dots \dots + \beta_n X_n \quad (4)$$

The logit model guarantees probabilities in the range of (0, 1).

The specific Logit model to predict the odds of a suicides farmer is specified as follows:

$$\text{Ln} \left[\frac{P_i}{(1-P_i)} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + u_i \quad (5)$$

Where,

ln = Natural logarithm

Pi=Probability that the ith farmer will be a farmer who committed suicide

1-Pi=Probability that the ith farmer will not commit suicide

X₁: size of the landholding (SL)

X₂: Family size (SF)

X₃: Total indebtedness (TI)

X₄: Total expenditure (TE)

X₅ : per hector expenditure (PHE)

X₆ : Value of livestock in rupees (LSV)

b₁ to b₆:are the coefficients of the six independent variables.

U is error term

1.6: Chapterisation:

The first chapter describes the objectives and scope of the study, providing a brief review of agrarian trends in the state and across three regions of the Andhra Pradesh. It raises certain concerns and issues in the context of deteriorating agrarian conditions in the state. It also presents in short the analytical method employed and the purpose and objective of the study. The second chapter deals with a critical and detailed review of literature. It has two parts. The first part explains macro dimensions of agrarian crisis and the second part deals with micro dimensions of agrarian crisis, viz., farmers' suicides and their implications. The third chapter highlights the salient features of agriculture in the state. It provides accordingly the trends and real analysis of landholding, cropping pattern in the three regions of Andhra Pradesh. The fourth chapter explores the trends in farmers' suicides in India and Andhra Pradesh. It indicates particularly a break point in year 2005, which is

different from that of India. The fifth chapter presents a detailed analysis of three districts, chosen one each from Andhra, Rayalaseema, and Telangana regions respectively. The detailed analysis comprises landholding patterns, cropping pattern and the resultant suicides intensities, distinct from one district to another. The sixth chapter identifies the reasons for farmers' suicides from selected three districts. It presents comparative analysis of inter-district and intra-district causes for farmers suicides in three regions of Andhra Pradesh. Further, a comparative analysis of the suicides with non-suicides in Andhra Pradesh too finds a place in the sixth chapter. The seventh chapter reviews critically various government policies implemented to resolve this crisis. It unearths the defects and drawbacks which are found in the policies. The eight chapter summarizes and concludes with an alternative policy framework which is farmer friendly and easily implementable at administrative and peasant level. It is also sustainable.

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CHAPTER-II

REVIEW OF LITERATURE

This chapter deals with a critical and detailed review of literature. It has two parts. While the first part explains the Macro Dimensions of Agrarian Crisis, the second part attempts to understand the Micro Dimensions of Agrarian Crisis, viz., Farmers' Suicides and their implications.

2.1: Macro Dimensions of Agrarian Crisis:

The complexity of the issues is unraveled by addressing both the macro contest and the regional level manifestations of the agrarian crisis. Macro dimensions include detailed analysis of structural, institutional, and policy changes; institutional credit; and state of agricultural research¹.

A study on "Agricultural policy for the Nineties; Issues and Approaches" by Vyas V.S (1994)². Data was obtained from CMIE, Economic surveys of 1992-93 and Respective Plan documents. He points out that the four major weaknesses that plague Indian agriculture are: preponderance of low value agriculture, low cost-benefit ratio, inefficient use of natural resources and the deterioration in the self-help institutions. According to him, the four factors are considered as major factors inhibiting sustainable agricultural growth. In Indian agriculture, per hectare value added is low in the production of most of the crops and mixes. This categorically suggests that the growth of income of farmer even in the case of high value crops (other than sugar) with a reasonable cropping intensity is meager. Secondly, the cost-benefit ratio is the inefficient use of the resources such as fertilizer, irrigation water etc. As a result, Indian agriculture has become high cost enterprise. The third disturbing feature is the degradation of the natural resource base of India. The resources are being used in such a manner that the sustainability of agricultural growth has been pushed to its threshold. Even though there are serious attempts to stop deforestation, the factors, which disturb agricultural land like degradation of the soil and fall in water levels, are going more or less unabated. The most serious handicap facing Indian agricultural is

the erosion of farmer self-help institutions, formal as well as informal and their increasing dependence on inefficient urban biased and centralized bureaucracy. Actually, the country is bestowed with the soil and climate, which can enable to reach heights of productivity in a large variety of commodities. Hence, Vyas concludes that because of endowed natural factors, an alert and responsive peasant population and shared political and bureaucratic consensus on poverty alleviation is need of the hour.

Parthasarthy.G and Shameem (1998)³ in their study on Suicides of Cotton Farmers in Andhra Pradesh: An explanatory study” tried to examine the reasons for suicides. Their in-depth study found out that the following factors like the lack of rainfall, lack of irrigation facilities, low yields are leading the farmer’s to disturbing distress. They gathered required data from Vaartha a Telugu Daily News Paper, Government of Andhra Pradesh and Bureau of Economics and Statistics, Season and Crop Report and Economic Survey. Their study was mainly on the suicides of cotton, farmers of Warangal district that occurred towards end of 1997. After an exhaustive data analysis, they reported that the main reason for the strain on the cotton peasant was the growing indebtedness of the agriculturist to the moneylender cum dealer. They also cited other relevant factors, which caused suicides, such as adverse rainfall and low yields, adverse prices, rise in cost of cultivation and particularly cash components, indiscriminate use of pesticides and high cost of cultivation, poor position of cooperative credit agencies and commercial banks, and growing power of moneylenders. They conclude that the main reason for the strain on the cotton peasant is the growing indebtedness of the agriculturists to moneylender-cum trader. However, this does not entirely explain the suicides. One has to understand the social milieu in which an individual gets alienated from the family and the society.

Revathi. E (1998)⁴ in her article on ‘Farmers’ Suicides: Missing Issues’ identified the non inclusion of irrigation as a major factor for the tragedy in Andhra Pradesh. Second missing point was the source of credit. Other major problem was tenancy. She observed that Telangana district of AP was precursor of many peasants’ movements. However, defeatist tendencies like suicides by the farmers were quite new phenomena to the region. More than sociological reason like alienation of

individual from family and society, it was the politics and economics of a neglected region for decades that was the cause of the suicide deaths.

A study on “WTO and Viability of Indian Agriculture” by Rao C.H.H (2001)⁵ tried to stress the impact of WTO on viability of Indian agriculture in which, he explained the main rationality of introduction of WTO and he further scrutinized the agreement to find out whether Indian agriculture reaped the benefits in the post globalization period. He argued that India could not exploit the trading opportunities with comparative cost advantage due to high domestic support, export subsidies and denial of market access through various tariff and non-tariff barriers in the developed countries. The major challenge to the viability of agriculture in India is because of the shortfalls in public investment, the poor provision of agricultural services account and the failure of agricultural supplies to respond to the favorable incentive framework created by macroeconomic reforms, including trade liberalization, in the 1990s. India was major exporter of food grains in the world but due to the unfavorable terms of trade exports experienced downfall and finally, the price fall in the international market, which significantly affected completely farming community.

Sidhu.H.S (2002)⁶ in his study on “Crisis in Agrarian Economy in Punjab Some Urgent Steps” presented chronologically the main objectives. This article has a brief description of how Punjab model of agrarian transformation evolved over time and the main issues that confronted the farming community in order. Punjab’s agrarian economy is at the cross roads as the agricultural production and crop yields have nearly stagnated. Land and water, the two most critical resources on which Punjab’s rural economy heavily depended, have sharply deteriorated over time. Hence, he is of the opinion that the future of Punjab Agriculture will depend upon their conservation, sustainable use and efficient management. He also without fail brought out the fact that the profit margins of the farmers have come down drastically. Farmers are therefore finding it difficult to pay back the loans, which they have, borrowed at a high rate of interest. Machinery bought with these loans is lying idle for most part of the year. In addition to this, they have also taken loans from commission agents for consumption purposes at exorbitant rates. As a result, the

Punjab farmers are highly indebted. Unable to pay back these loans and under pressure they are forced to mortgage land or livestock assets. Such a move alienated the farming community and compelled them to resort to suicides. The state itself is so highly indebted that its annual debt servicing liability is larger than the annual plan size of the state. The author thinks that there is an urgent need to diversify state's agrarian economy not only in the narrow sense of diversification within the crop husbandry sector but also in its wider sense of going in for allied agricultural and nonfarm activities and agro-processing in rural area. For diversification to be successful within the crop husbandry sector the state should be divided into a number of agro climatically homogeneous zones. In such zones, farmers should be allowed to go for only those crops for which the zone has had been designated as 'most suitable' by the agricultural scientists. To tackle the problem of unemployment and underemployment in the state, something on the lines of Chinese town and village enterprises (TVEs) where surplus rural labour force and small and marginal farmers work full time and farming becomes a part time vocation, appears to be the answer. In fact, the state should identify set of agro-based industries based on comparative advantage vis-à-vis other states, which can become nucleus of Punjab's future industrialization strategy. The state must concentrate its limited resources on developing/ supporting only those agro-based industries where it has a comparative advantage instead of frittering away limited resources on non-competitive areas. The findings of the study suggest that the state should strengthen rural infrastructure and improve the standard of rural education, which right now is in a total mess. Apart from this the strengthening of the cooperative movement, empowering panchayati raj institutions and investing in rural R and D to invent and popularize appropriate technologies, is urgently required. For this to happen the government will have to show political will to collect revenue, control corruption, rein in bureaucracy, stop following populist policies of appeasing undeserving section of society and end fiscal profligacy, if Punjab's rural economy is to be brought back on the rails.

In the paper, entitled "Safety-nets for Vulnerable Sections" by Parthasarthy.G (2003)⁷ the impact of stabilization policies on rural poor is discussed in detail. He

argues that reduction in fertilizer subsidies and rise in procurement prices of paddy and wheat caused high inflation adversely affecting the poor during 1990-93 and quantity of cereal consumption also declined. This is one of the main reasons for high incidence of hunger among poor. Incidence of hunger is inversely related to income level. He argues that inflation in this context of new economic policy not only eroded the real incomes of the poor but also led to the contraction of employment opportunities. In the short run, the growth of economy slowed down substantially in 1991-92. He also observes that NEP had adverse effects on handloom workers particularly in A.P. There were several starvation and suicides deaths in A.P. In the later half of 1991 the increased exports of yarn led to its scarcity in the domestic market and consequent rise in prices. He points out that cuts in the public expenditure in social sector affected the welfare of the poor in early 90s. Fiscal adjustments at state level, for example in A.P. led to withdrawal of Rs.2% - per kilogram on rice and reduction in quantum of subsidized rice. All India level number of poor went up by 10.7 million between 1987-88 and 1990-91. In this context, he also thoroughly revised the public distribution system as safety net. He found that the benefits of the PDS is mostly cornered by urban people as per capita consumption of food grains from PDS in rural area is only around 70 percent of the corresponding per capita use of PDS in urban areas. His studies reveal that the non-poor appropriate half of the quanta of cereals distributed under public distribution system. The state, which has high concentration of rural poor, gains very little from public distribution and accounts for only a small proportion of total consumption. As a result, its impact on food security and nutrition of the poor has landed in uncertainties.

Chandrasekhar Rao (2003)⁸ in his paper “Liberalization and suicides of farmer in India”, examines the phenomenon of suicides of farmers in the country against the background of domestic and trade liberalization in macroeconomic perspective by studying the changes brought about in the cultivation of cotton crop and to find the link between suicides and liberalizations. The erstwhile prosperous states of Andhra Pradesh and Punjab recorded a number of suicides of the farmers followed by Maharashtra, Karnataka and Gujarat. The phenomenon is widespread and cannot be

dismissed as either isolated or one off events. These suicides can be traced back to mid- eighties. The majority of victims were from small farmer workforce age group, and dry land cultivation and grower of cotton. At least one- third of them are tenant-cum-owner cultivators. Crop failure and indebtedness emerged as the main and causative factor, which social and psychological factors are precipitant in nature. The expected prices and income were not obtained for more than 50 per cent of the farmer. The export of cotton was liberalized since 1989-90 and has continued since then. Imports were totally liberalized in 1994 by placing under open general license (OGL). This has led to the percolating of prices uncertainty in the international market to the cotton farmer in the country.

He also points out that the farm harvest price had almost doubled in Andhra Pradesh, Punjab, Karnataka, and Gujarat in the first year of nineties. A large number of farmers entered cotton cultivation when prices increased in anticipation of huge profit, failure of chemical control, rising rental values of land depleting ground water popularization of hybrid, rice in money wages, hike in fertilizer, power, diesel and interest rates contributed to the large increases in the cost of cultivation. The farm harvest prices started declining after 1994-95. There is crisis in the cultivation of cotton even in the mid-eighties. A sharp decline in absolute productivity, price uncertainty due to trade liberalization and rise in the cost due to domestic liberalization, decline in credit and non-farm workers intensified the crisis. The cultivators of the cotton seem to be the net losers in the process of liberalization.

Vyas.V.S (2004)⁹ in his articles examined as to how to protect vulnerable sections. He highlighted the major structural changes in recent years particularly the reduction of the role of the government and increase in the role of market. Over a period, Indian agriculture has been progressively turning into small farm cultivation. Small and marginal farmers now operate 40 per cent of land. In addition, there have been significant changes; in the output mix in agriculture (from food grains to non-food grains and coarse cereals to fine cereals), another far-reaching change is increase in the costs of inputs (fertilizer, pesticides, seeds and mechanical power). He further added that the growing openness of the economy and the liberalization of external

trade police causes price fluctuations in the domestic market. He suggested the following measures for the mitigation of large rural vulnerable sections of the population by enhancing investment in strengthening the resources base of agriculture. By devising suitable instruments which protects, in any event to compensate small and marginal producers for losses from natural calamities, by designing organization interventions to impart strength to their economy, by lightening the interest burden from the non-formal sources of credit, and by encouraging RFI to take over the debts of the farmers from various sources.

“Agricultural Growth Farmer Distress Tentative perspectives from Karnataka” by V.M Rao, D.V Gopalappa (2004)¹⁰, used in this paper the data which has been drawn from season and crop report and statistical abstract, Bureau of Economic and statistics of Karnataka for the years covered 1970-71 to 1999-2000. Eight principal crops selected for study in Karnataka are rice, ragi, jowar, maize, tur, cotton, sugarcane, groundnut and focus on per hectare yield to analyses the growth performance of crops in their major producing districts in the state as a whole. They pointed out that farmer distress is not an outcome of the lack of agricultural growth but paradoxically, of the enterprising qualities of farmer who pursue growth and even achieve it good measure. The indications are that farmers in Karnataka respond quite well to changing market and are receptive to new technologies. However, the drought- prone environment, combined with a non-caring policy regime, turns in the very producers to victims who bring about growth. The result is spate of suicides among farmers in recent years. It should be a sobering thought that each suicide may dissuade scores of other from going ahead with their plans for shifting to new crops, technologies and practices. They pointed out that adverse weather effects could break the back and spirit of even enterprising farmer and it is weakness of policy intervention which bear the blame for farmer distress.

Aidas jainaih (2005)¹¹ analyzed in his article the factors causing the farmers suicides. India’ achievement in green revolution during 1960 was appreciated over the globe and termed as a model for other Asian countries. It is not possible without the development of agriculture and agro-based industries. Nevertheless, Indian

farmers are facing many challenges because of recent droughts. Not only farmers, but also rural sector seemed to be under stress in the era of globalization and privatization. Suicides of farmers have become a trend for the last one year. Indebtedness is main causes for suicides. The agriculture credit from various sources is increased but its accounts for only half the cost of agriculture inputs. Thus, farmers will have to depend on other sources of credit. In addition, 82 per cent of Andhra Pradesh farmers are indebted to recover the costs. Rural employment has declined in this reform period and living standards of rural people declined. Moreover, disparity of expenditure of rural and urban people increased in 1990s. These points show the economic growth of rural sector is less achieved and not so commendable. More indebtedness of farmers on the other hand, household expenditure is increasing for social obligations. So they are forced to borrow from various sources. The deceased farmers were highly sensitive to the stress and humiliations, which arise out of debts. They did not have any other sources of income other than agriculture. He suggested that there is an urgent need to direct the development policy towards improvement of the rural sector. The current position is due to negligence in the form of declined investments. Therefore, it needs to be promoted to improve. Rural non-crop and non-farm sectors are to be promoted to improve income base, which will compensation crop failure. There is main provision available under WTO agreement to improve and protect farmers' interest. For example, imported cotton products price can be hiked. Improvement of domestic sector similarly agriculture research and use of natural resources can be improved.

A study on Immersizing growth: Globalization and Agrarian Change in Telangana, South India between 1985 to 2000 by Vamsi.V(2005)¹², analyses the impact of various government policies and agricultural globalization on cropping pattern, distribution pattern, and impact of various input uses in dry land agriculture in the era of globalization. He tried to raise many questions related to policies toward agricultural globalization on growth patterns, distribution patterns, commercialization, and the supply response of peasant farmers by analyzing agriculture in the Telangana region of South India between 1985 and 2000. To

analyze the impact of globalization in Telangana he has performed growth computations between 1970 and 2000 for agriculture in that region, track distributional changes based on the National Sample Survey (NSS) data between 1985 and 2000 using non-parametric regression techniques, and estimated an econometric model of supply response for Telangana farmers. This empirical investigation leads to two puzzling outcomes for the author- one in the supply response arena and the other in the distributional arena. First, even as the prices of market-oriented crops have declined between 1991 and 2000 (during the phase of globalization), the planted area and the output of these crops have been rising rapidly. Secondly, he discovers that the annual exponential growth rate of real agricultural output in the Telangana region of South India between 1985 and 2000 has been more than 4%. It is higher than much of the developing world during the same period, even as a majority of the farming population has undergone significant income/consumption losses, tragically manifested in the suicides of more than a thousand farmers. Finally, author in this study concludes that the globalization-induced decline in the prices of non-food output in conjunction with local informal lending practices that requires these very non-food crops as collateral help explain the tragic puzzles. The policy implications too were analyzed in this study.

The article ‘political economy of agrarian Distress’ by K .C Suri (2006)¹³, presents an analysis of agriculture policy in India in three phases. According to him first phases i.e. immediately after independence and the following two decades, there were several pro-peasant policies such as the abolition of intermediaries, reduction of land revenue, provision of irrigation facilities and a greater share in political power for the farming communities at the state level. This also suited the strategy of import substitution and industrial development pursued after independence. The farmer produced necessary surplus food grains, which would free India from its chronic dependence on foreign countries, also enabled the government to divert valuable foreign exchange to investment in industries; ensure the supply of raw material necessary for the expansion of industries and provides markets for the manufacturing sector. This instrumental view helped farmer to the extent that the ownership of land

by the cultivator and the provision of infrastructure facilities provided by the government for augmenting production. The second phase, which begins in the late sixties, emphasized the need to take up modern methods of cultivation, such as the use of machinery, high yield variety seeds and fertilizer and pesticides, and all this happened with the advent of the green revolution. While the new agriculture strategy led to an increase in agricultural productivity, it also had other consequences, probably unintended, that adversely affected rural life. With the increase use of machinery for agricultural operation, cultivation of single crops under the pressure of the markets, the earlier practices of farmer cooperation with each other in agricultural operation began to die out. Agriculture became a cash based individual enterprise requiring high investment in modern inputs and wage labor. Farmers had to draw more and more credit for cultivation of crops. As a result, the demand for credit increased by several times when compared to the earlier period. Lack of remunerative prices in such a situation led to immense trouble to farmer. If, in addition, the crop would fail-due to either natural or manmade factor- the farmer economy was doomed. The uncertainty of crop yield and fluctuations in the prices of agricultural produce caused great deal of mental distress to the farmers.

In the third phase , in the last two decades or so , policies of removing the state support to agricultural and diluting import restrictions have been followed. This has actually led to further degradation of agriculture, instead of its promised growth and development of the farmer in these countries. The developed nations, especially the US and European Union countries continue with their policies of the state support to their farmer and urge the developing nations to reforms their tariff regimes to facilitate imports or free entry of multinational companies in the seed and pesticides markets. While the developed nations could successfully use the WTO terms related to tariff regimes, antidumping laws and dumping food in the name of aid or dumping other agrarian produce in the markets of the developing nations with high subsidies to their farmers, such inadvertent acts have destroyed the farmer economy in the developing nations.

To attribute the crisis in agriculture sector entirely to poverty and drought would therefore amount to over simplification of otherwise complex situation says E A S Sharma (2006)¹⁴ in his article on “Is rural economy breaking down - Farmers suicides in Andhra Pradesh”. He accurately assesses that the concentration of governance in state headquarters and absence of community participation in decision-making, in the present model of economic development is absolutely market friendly. Such a move opts for, commercialization of every sphere of rural economy that has eroded the legitimate entitlement of the poor to common natural resources that are available in limited quantities are some of the issues that are to be taken into consideration in understanding the crisis in the rural economy. Case by case, he tries to explain the divesting nature of the government schemes which are otherwise believed to be promoting the interests of village community. Free power supply to farmers, underfunded and ill equipped public health care systems, the user charge model, the inappropriate housing schemes, aspiring for IT education and resulting hike in dowries, lack of efficacy in network of institution that provide credit, he says added to the debt burden of rural households. He also discussed at length about the crisis existing in the non-farm sector especially, those occupations which have linkages with agriculture sector. In a traditional caste ridden society, it is not easy for the artisans to be resilient and shift to a different profession. Artisans usually do not have the wherewithal to invest on new equipment and new skills. Without external help, the author says, they fall prey to local moneylenders. He found that the indebtedness among the fishermen communities is also high and they too face similar problems as those faced by farmers. He gently cautions us not to buy the idea that if there are no suicides; it means that they are comfortable. It speaks more about the sheer strength of their will power and their never-give-up attitude. Finally, he concludes that without addressing the basic issues, the government schemes, however attractive they may be the crisis cannot be resolved but it further intensifies. He recommends that the strengthening of village administration, improving the support systems and community participation in decision making would help in chalking out ways and means to put the rural economy out of crisis.

The article “Why do farmers commit suicide the case of Andhra Pradesh” by V. Sridhar (2006)¹⁵, examines the neglect of agriculture sector by the state owing to its reformist policies as a cause for the present distress. He starts with saying that the consensus among the psychiatrists and social scientists is that a substantial dislocation of livelihoods drives a community to despair and eventually to suicide. Although the phenomenon of suicide is deeply personal and individual act, suicidal behavior is determined by confluence of factors. These are in two domains: one the internal domain related factors, which operate at the level of the individual and the other, is external, which suggests that larger social process determines suicidal behavior. It places emphasis on broader society level changes as being responsible for deaths by suicide. The reasoning is that individuals unable to cope with the social churn, in which they find themselves, resort to suicide and of course, this is accentuated when such a churn is also accompanied by widespread economic distress.

After this theorization, he attempted to put the happening ground realities in the above framework. He continues to claim that the suicides in Andhra Pradesh have occurred in varying agro-climatic zones and the promotion of death toll was high among small, marginal and tenant cultivators. If it is accepted that the phenomenon of suicides is driven by dramatic changes in socio-economic conditions then the examining of what in the lives of peasants has changed so dramatically in the last two decades as to have pushed them to take their own lives. One cannot find a single factor as causing suicides, it is becoming clear that the set of policies unleashed by economic liberalization in the last decade have played a significant role. Frequent droughts in Rayalaseema and Telangana regions are only one aspect of the problem. Soil degradation and inappropriate agricultural practices, rising cost of inputs, wild fluctuations in farm output and prices, rising indebtedness are other aspects of the problems. The author carefully notifies that indebtedness often described, as the proximate cause of suicide is only symptomatic of the larger malaise that afflicts agriculture and its practice in state. Concisely, he has presented an account of how liberalization process had a negative impact on agriculture. The state in the last 10-15 years has stepped back from its role as a promoter of agriculture and facilitated the

entry of landed gentry. The freeing and marketization of agricultural products, relaxing the control over the terms on which peasants access farm inputs, reduction in subsidies on fertilizers, withdrawal of support of state for agriculture extension services, decline in public investments on infrastructure such as energy and irrigation, financial liberalization, which compel the government to favour at the cost of local farmers to WTO, have become nooses to the very same farmers by and large.

The article “Agrarian crisis, Looking beyond the Debt Trap” by Ratna Reddy V, Galab.S (2006)¹⁶, attempt to identify the main drivers of the agrarian crisis that are pushing the farmers into distress and ultimately leading to suicides. They argue that aggregate and cumulative effect of a number of factors is responsible for the present agrarian crisis. For the sake of simplicity, these factors are categorized under four groups, namely, technological, ecological, and socio-cultural and policy related. However, these categories are not watertight compartments, as some of the factors are inter-connected, identified household indebtedness as the main reason for the suicides. While indebtedness is the factor driving farmers towards suicide, the factors that are responsible for indebtedness are less understood. As a result, approaches towards mitigating the end (indebtedness) are proving to be ineffective. Unless the means (factors leading to indebtedness) are understood and corrected, the distress is likely to continue. Suicides are the result of the deep-rooted agrarian and rural distress rather than a temporary phenomenon associated with institutional credit or rainfall. The past decade records across the states and increasingly regular incidences of farmers’ suicides point to alarming agrarian crisis in the country. Agriculture is becoming increasingly an unviable proposition irrespective of rainfall pattern. This clearly reflected in the data from the National Sample Survey Organization’s 59th round, which reveals that a third of the farmers indicated that farming is not profitable and another 40 per cent of the farmers are ready to give up farming in favour of a job. Presently according to the available information and data, 70 per cent of the farmers are frustrated with their profession.

A study on “Farmer suicides and the agrarian crisis “by vaidyanathan. A (2006)¹⁷, reveals the trends in Indian agriculture – farmers’ suicides, and asserts that the declining prices of several crops, widening disparities between agricultural and non-agricultural sectors and a marked slowing down in the rate of agricultural growth cause the crisis. People are driven to the extreme step of suicide not only because of imprudently large borrowing from high cost sources and for non-productive uses but because the increase in net incomes from loans used for productive purposes falls far below expectations. Suicide-afflicted households have also borrowed heavily for digging/deepening wells and for cultivating input-intensive high-value crops (like BT cotton and spices) in the expectation of high yields and good prices. Failure of these expectations is a major reason for their inability to repay these debts. However, the Planning Commission is mistaken if it thinks acceleration in the growth of manufacturing and services will pull agriculture out of its present crisis. In addition, contrary to much common belief, indebtedness, low levels of investment and import liberalization are not the causes of the agrarian crisis. A radically different approach is required to make the farm sector grow by 4 per cent a year.

The paper “Urban bias in Development Planning as a cause for suicides of farmers” by. C.S Murthy(2006)¹⁸ remarks that even if one concedes that reforms are to be vindicated for the suicides, reversing the reform process is not possible. Moreover, the outcomes of reforms have been encouraging in some spheres like overall growth rate, inflation rate, foreign exchange reserves, foreign investment, information technology, and international relations and so on. The solution to problems faced by agriculture lies not in reversing the reform process but in putting an end to urban bias in development planning and making the reforms work for the under privileged people of the society. He explains that the economic reforms influence suicides in two ways: one is that they have aided the process of alienation (adverse effect) and second the income effect (either favorable or unfavorable) depending on the domestic and international prices, terms of trade between agriculture and industry and within agriculture, between food and non-food crops. The adverse consequences of alienation could be moderated if farmers experience an

increase in their crop incomes. He attributes suicides to traders who took advantage of poor extension facilities, high cost of cultivation, high interest rates, breakup of joint family system and resulting alienation and more generally the decline of social support systems. Above all, he blames the urban bias and flow of funds, which were against rural, and agriculture sector. This resulted in low labour productivity. It is this misplaced emphasis and the thinking that urban bias is a sine-con-non of economic reforms and therefore one cannot escape from it is wrong. The author believes that it is possible to resolve the issues concerning agriculture sector within the confine of economic reforms. He aggressively supports the role of moneylender and his charging high interest rates because the moneylender is hedging funds against risk of default, which is very high in agriculture and for providing quality services. Since our initial conditions are such that majority of the people live in rural areas and are better suited to producing agricultural products cheaply our priority must lie in rural areas. Any package announced by government to mitigate suicides should comprise three components: 1. Kin of deceased should be assured dignified future life. 2. Mindset of potential suicide victim has to be changed 3. Agriculture should be made profitable. He is apprehensive about those who argue that package will cause more suicides because he believes that they grossly underestimated the familial bonds in our rural households. In his conclusion, the author has suggested few ways to mobilize the resources for betterment of rural areas and farmers, like imposing special cesses on urban activities, levying taxes of permanent nature on privileged urban classes, diverting resources where ever possible from present urban uses to rural uses and putting an end to the demands of urban labor aristocracy for pay revisions. He affirms that the gainers of urban bias have to make sacrifices to aid the victims of the bias. The funds raised as said above can be used to repay the institutional and non-institutional debts, if they are registered and are not repaid for genuine reasons. The government can also consider standing as guarantor for loans borrowed from moneylenders if such loans are registered. These initiatives would facilitate free flow of funds at cheaper rates of interest and this may alter the conditions of the farmer who is on the verge of committing suicide.

Ramesh Chand, S.S. Raju, L.M. Pandey (2007)¹⁹ in their article on growth crisis in Agricultural, severity and option at National and state level, examine the trend in agricultural growth and factors underlying the slowdown and explain ways and means to bring about a acceleration. Data was collected from National accounts statistics, agricultural statistics at glance, and CSO for this paper. According to them the initial year of reforms were somewhat favorable for agricultural growth, but post WTO period witnessed a sharp decline in the growth rates of all sub-sectors. Moreover, commodity groups in the agricultural sector and the disparate growth rates of agricultural and non-agricultural sectors are added reasons for crisis. At the state level, the growth rates has turned negative in four out of 20 major states while six states show growth rates ranging between 0.10 and 0.95 per cent. Further, the growth rate of agriculture in most of the low productive states was much higher than the national average during 1984-85 to 1995-96. However, after 1995-96, their growth rates not only declined but also turned out to be much lower than the national level average. The main reason for deceleration and stagnation in agricultural output after 1995-96 is a slowdown in growth of fertilizer use, irrigation, and energy in some cases, stagnation or even a decline in other cases. Crop intensity has shown either a poor growth or a decline. Diversification towards high-value crops has also shifted down and in some cases farmers have been diversifying away from the high-value crops towards low-value, less risky and less input- demanding crops.

A Study on “Globalization and Agricultural Crisis in India(2007)²⁰” by Ajay and Manoj Kumer Mandal, examine the impact of globalization and liberalization on the growth of agricultural output and export, generation of employment and reduction of rural poverty. They used secondary data collected from agricultural statistics at a glance, area and production of principal crops in India, NSSO data published by government of India for the period of 1970-71 to 1998-99. They observed that the growth rates of food and non-food export have fallen remarkable from 3.54 and 4.84 percent per annum during the pre-reform period from 1980-81 to 1989-90 to 1.66 and 2.36 per annum during the eight year period of reforms i.e. 1990-91 to 1997-98. They stated that there are many causes for the deceleration in the growth of agricultural

output and yield of major crops in India. The most important among these was the sharp deterioration in total investment and more so in public sector investment in agriculture. It is observed that the agro-exports registered a negative growth during the post- reforms period to pre-reform period. The most significant causes for deterioration in agricultural exports are the increases of non-competitiveness in the global market. It is noted that after liberalization rate of unemployment and poverty ratios significantly increased.

The article “Farmer suicides in Maharashtra” by Siddhartha Mitra, Sangeeta Shroff (2007)²¹, identifies the ultimate/ root causes of farmers’ suicides in Maharashtra. Data used in this paper are drawn from www.Indiastate.com, www.Cotlook.com, directorate of economics and statistics, Ministry of Agriculture GOI. They conclude that the loss in the competitiveness of the Indian cotton farmer after the opening up of Indian agricultural economy in the mid-1990s was a major reason for the increasing incidence of farmer suicides. In a closed economy framework, farmers were faced mainly with yield risk and any crop loss could at least be somewhat compensated by an increases in domestic price. In an open economy, however, crop failure may be accompanied by a fall in the ruling price based on the increase in world supply. Thus, the farmer faced not only yield risk but also price risk. Overall, three factors contributed to the plight of farmer-low yield exposed to the lower international prices after liberalization, a lack of dynamism in cotton yield per hectare in a dynamic world and a huge increases in costs of cultivation. All these factors made cotton farming un-remunerative. In the case of Maharashtra, there was a suicide epidemic in recent times because of the above-mentioned imbalances, which lead to a decline in profit in incomes levels, which were significantly negative. One recent factor leading to an increase in the cost of cultivation is the use of costly BT cottonseeds by farmers. He also suggests policy measure of counter cyclical export, imports tariffs, increase in research efforts adoption of integrated pest management measures by stepping up extension effort, organic farming, transgenic varieties. He is categorical that instead of transgenic hybrid seeds, the liberalization of tenancy law is an apt and possible solution for the agrarian crisis.

The article “Agriculture: Absence of a Big Push by Mahendra Dev.S (2007)²² makes a critical review of the massive loan waiver scheme announced by the union government in 2008-09 budgets. The loan waiver scheme involving a huge outlay of 60,000 crore rupees is supposed to be a good initiative taken by the government to mitigate the crisis. He says that there are many exclusions and limitations to it. The budget presented amidst of crisis has not given a big push to the other core issues like public investment and infrastructure, water management, research and extension, price stabilization and other long-term issues. Limiting the scheme to the landholdings up to 2 hectares has excluded many dry land farmers where maximum number of suicides has taken place. According to NSSO 59th round, only 27% of the farmers have access to institutional credit. In other words, only 2.4 crore-farmer house-holds out of 8.9 crore farmers households have benefited by the scheme. Even across the different regions in the country the southern regions where 40% farmer households have access to institutional credit have benefited more when compared to eastern, north-eastern and central regions where only 19%, 4% and 22% farm households respectively have access to formal credit. In his opinion, farmers need measures for raising output and good prices rather than more credit to have agriculture that is more viable.

A study on “Agriculture in the Reform Regime” by D.Narasimha Reddy and Srijit Mishra (2009)²³ scans the Agricultural scenario in the Reform Regime with special emphasis on the economic reforms initiated and introduced in the early 1990s. Data was collected from CSO and NSSO, www.indiastat.com, national accounts of various years, NCRB etc. The impact of reforms including the trade liberalization, decline in public investment in agriculture, shrinking share of formal institutional credit, rising input and commodity prices are mentioned as major factors contributing to agrarian distress. Authors also discuss the causal factors for farmers’ suicides, insist for improvement in state support system, and reduce the compounded risks of adjustments towards improved productivity and livelihoods.

Remesh Chand (2009)²⁴ in his article on “Capital formation in Indian Agriculture; National and State level Analysis”, he emphasizes on the trends in public

and private capital formation in agriculture during the past two and a half decades. The data was taken from CSO, National Accounts Statistics from various years; Government of India, Economic Survey of various years. The author analyses the reasons for decline in the growth of public investment in agriculture and its virtual stagnation during 1990's. The author states that getting the prices right would do the trick for agricultural development. He also discusses about the importance of public investment in reviving agricultural growth.

A study on “Agriculture Credit and Indebtedness Ground Realities and Policy Perspectives” by S.L.Shetty (2009)²⁵ discusses the trends in the growth of institutional credit to agriculture. Data was taken from RBI, basic statistical returns of scheduled commercial banks in India, NABARD, and NSSO. It is shown that during the year following bank nationalization, there was rapid increase in the institutional credit to agriculture at a rate much faster than the growth of agriculture gross domestic product (GDP). However, the increasing credit needs of agriculture because of commercialization were not fully met, particularly in the 1990s, which resulted in increasing dependence of especially small and marginal farmers on expensive informal sources. There was a decline in the credit flow to agriculture during the 1990s because of the financial sector reforms. He suggests that attention needs to be paid to better credit delivery and effective monitoring systems.

2.2: Micro Dimensions of Agrarian Crisis, via Farmers' Suicides.

The cases studies of five states like Maharashtra, Andhra Pradesh, Karnataka, Kerala and Punjab, which experienced high and unusual incidence of farmers' suicides and agrarian distress present the micro –perspectives. These case studies not only bring out the diversity of conditions prevalent in the respective states, but also highlight the common problem of failure of public support system in agriculture. The methods used, ranged from model of explanation based data from national surveys to discussion of the state-specific situations in and through farmers' households' survey²⁶.

Citizen Report (1998)²⁷ on Gathering agrarian crisis and farmer's suicides in Warangal district (A.P) India. The main objective of the study is to identify the reasons for unprecedented farmers' suicide deaths in Warangal district. The study is based on macro and micro data, macro data collected from Season and Crop Report, Andhra Pradesh State, relevant issues, and from various issues of Statistical Abstract of Andhra Pradesh State. Micro data obtained from well-structured questionnaire. The study clearly shows that crop failure and debt burden appear to be primary reasons for suicide deaths. "Other factors" contributed for suicide deaths. "Other factors" include social functions, ill health, children's education, loss in petty business and family affairs etc. Based on the responses of the deceased households, for the purpose of analysis the reasons are grouped into three categories: 1) Crop Failure 2) Debt Burden and Crop Failure 3) Debt Burden, Crop Failure and others. About one-fourth of suicide deaths are due to crop failures. This year's miserable failures of not only cotton crop but also other crops have thrown these farmers into a crisis. Most of the loans are made for meeting the farm expenditure in one or two years. About 42 percent cases have direct relation to debt burden and crop failures. For them, part of the debt has been existing over the years and here dietary debt forms a minute part of it. The partial failures of the crops because of irrigation and pest in the last two or three years have resulted in erosion of their ability to pay the current loans and ultimate accumulation of debt. In the third category, one-third of the farmers reported that apart from these two reasons, the other factors also added to the debt burden. Among other factors, marriages and social functions occupy predominant position. For instance Nachinapally, Gorlaveedu, Elukurthi haveli, cases are certain examples where performance of daughter's/sister's marriages contributed substantially to the total debt.

Revathi.E (2006)²⁸ in her article on "Agrarian Distress and farmer suicides in Andhra Pradesh" examines incidences of farmer suicides and analyzes its determinants. Her study concludes that the incidents of suicides are more prevalent among small and marginal farmers who have grown non-food crops and depended on ground water irrigation sources in rain-fed areas, indicating that suicides are both

regional and a class phenomenon. Higher level of indebtedness is increasing the probability of incidence of suicides, but the larger proposition of credit from the formal institutions obtained by the farmer is reducing the probability of the incidence of suicides. Larger investment made on ground water infrastructure, reduced the probability of the incidence of suicides of farmer only when the non-food crops yielded good returns. The larger gap between the expected and received output prices has increased the probability of the incidence of suicides.

Narasimha Rao.P & K. C. Suri (2006)²⁹ in their article on “Dimensions of Agrarian Distress in Andhra Pradesh” used both primary data and secondary data. They obtained primary data from the surveys conducted by researchers. Secondary data was availed from state government sources, National Bank for agricultural and Rural Development (NABARD), National Sample Survey. The authors examined the changed nature of agriculture involving high costs and low or negative returns. They also looked into the factors leading to indebtedness, larger process of liberalization, the qualitative difference in the indebtedness among farmers. According to them, the share of agriculture in the states GDP has decreased from 53% to 13% between 1960-61 and 2002-03, where as the workforce declined only to 62% from 69% during the same period. Thus, the population engaged in agriculture has been sharing the decreased income. The disparity in income in agriculture and non-agriculture has been increasing. According to the authors, this marks the crisis in the sector. Apart from some commonly pointed out issues, they quoted two examples to explain the changed nature of agricultural practices. One is concerning the motive behind borrowing. In olden days, much of the debt was for non-agricultural expenses (this is authenticated by Royal Commission on Agriculture 1928, Madras Provincial Banking Enquiry on Agriculture 1930, Sainathan 1935, and Narayanaswami Naidu 1946). However, in recent times as high as 62% of the debt is to meet the agricultural expenses (NSS: 2005 b: 26). The second issue is the change in the nature of irrigation practices. The share of agriculture and allied activities in the state government expenditure under various plans has declined from 11.8% in 1980-81 to 1.8% in 2001-2002. As a result, the proportion of area under canal and tank irrigation has

declined and ground water irrigation has gone up. At least 63% of the ground water irrigation is through bore wells. These, along with other factors has increased the cost of cultivation and made agriculture, an unprofitable occupation. In the micro level case studies on two villages, they found that there is a high correlation between farm size and debt. They also found that low literacy rate, breakdown of joint family system, collapse of social institutions are some of the social factors that have contributed for agricultural crisis.

Chowdary (2004)³⁰ in his article “whose life was that anyway... Farmer suicides in Andhra Pradesh”, has analyzed the reasons for agricultural problems. According to him, the major factors leading to agricultural difficulties are the negligence of agriculture by government, unremunerative nature of farming, and indebtedness of the farmer. Lack of quality inputs like seeds, overuse of fertilizers and pesticides, declining productivity, and lack of irrigation facilities too add up to the above ones. Power supply shortage, inefficient agricultural extension services, decreasing public participation in the agricultural sector, absence of proper agricultural insurance, fall in agricultural prices, problems related to tenant farming and extensive export orientation in agricultural are some more note worthy factors that fuel the agricultural crisis.

The main objective of study on unfold the agrarian crisis in Andhra Pradesh by A.Galab, E.Revathi, and P.Rrudhvikar Reddy (2009)³¹ was analysis of the agrarian crisis in Andhra Pradesh in the light of a series of farmers suicides in the state. Data was collected from Andhra Pradesh Rythusamgam, Government of Andhra Pradesh, and Department of Economic and Statistics in Andhra Pradesh, Ministry of Agriculture and Cooperation, Government of India. It is stated that the crop failure and uncleared debt burden were the immediate causes for suicides. Further, it is also mentioned that most of the suicide deaths are from the BC, SC and ST communities who fall in the categories of marginal, small and even medium farmers. The study reveals that 55 per cent of farmers in the State do not get the Minimum Support Prices. The essential condition is the need for a policy shift from

the neo-liberal market centered reforms to the building of economic and social support systems to make small – marginal farming, available systems.

The article entitled “Agrarian Distress in Bidar: Market, state and suicides” by Vasavi A.R (1999)³², used secondary data from district statistical handbook 1995-96 and NABARD (1996). She meticulously analyzed the spate of suicides by agriculturists in Bidar in Karnataka. Her analysis reveals that the suicides are symptomatic of larger and more pervasive crisis in the region. The crises are ecological, economic, and social; each interlinked with the other and combining to produce distress in the region. She also points out that to fathom the magnitude of the distress in this region one needs to understand several ways in which the region’ economy has come under distress today. No irrigation facilities, and no alternative economics opportunities, poverty, inadequate infrastructure facilities, the government programmes and policy, which favors agricultural development in wet regions, compounded the crisis. The study also found out that the role of capital and the market have great influence on the conditions of the people in the region. The modern agriculture inputs (seeds, fertilizer, pesticides, technology etc) required much of the capital to purchase, which is not easily available to a majority of people of small and marginal cultivators, especially sharecroppers. They are bypassed by institutional credit agencies. After this theorization, she attempted to highlight the real happenings on the ground in the above farm work. Poor climate, failed crops, an inefficient local government, poor quality pesticides, pest and diseases have worried the field and the farmers. Hence, the lives of peasants have changed so drastically for worse in comparison to the previous years.

A study on agrarian transition and farmers’ distress in Karnataka by R.S. Deshpande (2008)³³ used both primary and secondary data. The primary data generated from fieldwork by author and secondary data taken from agricultural statistics at a glance, ministry of agriculture, government of India, various years, and government of Karnataka have become basis for analysis and conclusions. His study finds that the state has one of the lowest proportions of irrigation area with the predominance of rain-fed agriculture. Under such circumstances, the narrow techno-

centered green revolution strategy brought about inappropriate cropping pattern in many parts. Therefore, the state is characterized by extreme regional disparities. Agricultural distress is acute in the northern dry regions with a very high incidence of suicides since 1997. The following factors caused either partially or fully the agrarian distress viz., indebtedness, increasing stress on natural resources, frequent failure of monsoon and droughts leading to crop loss, lack of proper marketing facilities, declining extension services, and the absence of counseling institutions. Though the above causes are identified as the main factors precipitating the crisis, the study also states that the stagnation in productivity has been rather perpetual in case of oilseeds and pulses, which received least attention in the research agenda of the agricultural scientist as compared to cereals. The innovation has to be acceptable to the farmers in the current cultural and resource availability context. The new agricultural policy envisages addressing the problems of farmers by organizing them into Pragatapar Raitha Okkuta (PRO), to organize them as a group on lines of SHGs.

Deshpande R S and Nagesh Prabhu (2005)³⁴ reported that indebtedness was the major factor for farmer suicides in Karnataka. As many as 61.6 percent of farmer households were indebted compared to a national average of 48.6 percent. The study found that banks were a major source of loans (50 percent) followed by moneylenders (20 percent), co-operative societies (16.9 percent), relatives and friends (6.8 percent), and traders and government agencies (1.9 percent each). However, the study revealed that 34 percent of indebted farmer households borrowed from moneylenders. Thirty two percent took loans from banks and 23 percent from co-operatives. Seventy-one percent farmers were unaware about the minimum support price scheme and 57 percent of farmers had no knowledge about the crop insurance scheme.

A study on “Distress, Debt and suicides among farmers households: findings from village studies in Kerala” by Nair. K.N, Vineth Menon (2006)³⁵ examines the household livelihood strategies under agrarian distress in Pulpalli Panchayat of Kerala. It also looks at the relationship between household assets and livelihood strategies. The negotiations of institutions by the marginalized and depressed sections of the society were analyzed in detail. Major causes of agrarian distress in the study

area are the Ecological Degradation and fall in crops income. Land continues to be the most important asset determining livelihood outcomes. This study investigated the livelihood strategies in relation to land, education, housing Pattern, investments, credit facilities, and participation in organizational activities. The livelihood strategies adopted by farmers in the wake of Agrarian Crisis includes diversification of agriculture, sharecropping, organic farming, self-help group activities, cattle rearing, migration and exchange of labor. Livelihood strategies varied across socio-economic groups as farmers owning better landholdings diversified cropping pattern while poor households participated in the activities of SHGs. Causal agricultural laborers and marginal farmers moved to other places in search of job. Mitigation of agrarian distress requires public provision of education, health and other social safety measures.

Jeromi P.D (2007)³⁶ in his article on “Farmer Indebtedness and Suicides, Impact of Agricultural Trade Liberalization in Kerala, made use of both primary and secondary data. The primary data were obtained from the surveys conducted by researchers and NGOs. Secondary data were availed from state government sources, Reserve Bank of India (RBI), National Bank for agricultural and Rural Development (NABARD), National Sample Survey Organization (NSSO), The study broadly covers the period from 1970-71 and 2005-06. The main objective of this study is to identify the factors leading to the farm crisis, the rise in indebtedness and various dimensions of farmer suicides. During the last three and half decades, one can identify three phases in the growth of net state domestic product (NSDP) from agriculture. In the first phase, we notice 0.9 percent growth per anum in the early 1970s to the mid-1980s mainly due to rising cost of production following high wages. On records we have in the second phase an increasing trend of 4.9 percent growth per anum during the mid-1980s and the mid-1990s due to a shift from labor-intensive food crops to high-value commercial crops and a turnaround in productivity. Since then, we come across an interesting downward trend in income generation in this sector. Hence, the third phase is stagnant at 0.3 per cent per anum from 1997-98 to 2005-06 mainly due to the fall in price, stiff competition for its exports and imports

after trade liberalization. As a result, the share of agriculture in total NSDP declined drastically to just 13.2 per cent in 2005-06. Besides trade- related factors, reasons like deficient rain fall, stagnation in production and productivity and steep fall in prices added fuel to the woes of farmers.

“Analysis of Farmer Suicides in Kerala” by Mohankumar S, Sharma R.K(2006)³⁷, depended on the data collected from CMIE, Agriculture and economic review, agriculture statistics 2003-04. They attempted to explain how the price-fall in the export dependent crops has claimed the lives of many farmers in Kerala since 1997. The agrarian crisis and farmers’ distress in Kerala over the past one decade are closely linked to the neoliberal policy regime implemented in the country in the recent past. The association between the two is more in the regions of the state, which are heavily dependent on export-oriented crops, such as coffee and pepper. The worst affected are the small farmers, as they are more vulnerable to crop losses and a price fall. Those farmers found it extremely difficult to pay back the loans they have incurred to grow crops and survive. Unless the plight of farmers is addressed in terms of changing the macro-policies, regulating taxes, prices and imports, the condition of the farmers cannot be improved on a sustainable basis, either by increasing the availability of institutional credit or providing some alleviatory sops to the victims of suicide families.

Ramesh Chand (1999)³⁸ in his article on “Emerging Crisis in Punjab Agriculture, Severity and Options for Future” discusses prospects of the diversification alternative and its implication on employment, income, natural resources and ecology. An attempt is also made to propose future strategy for agricultural and economic development of Punjab in the post-green revolution period. The study is based on secondary data at state level and micro investigations at grassroots level based on field survey of 300 farm households in Ludhiana district, which is agriculturally most advanced. The study suggested that (i) Indiscriminate and excessive use of irrigation should be checked through volumetric pricing of water, which in the case of electric tube wells means levying energy (electricity) used for irrigation based on actual use. (ii) In the areas with serious water depletion problems

(known as dark blocks) some incentive for keeping a part of land fallow should be considered. (iii) Diversification of existing crop pattern with suitable crops would result in some, though small, savings of water. Since no single measure can result in large reduction in water use, the strategy should be to make use of such small savings wherever possible. (iv) Incentive should be provided for installation of water saving devices like drip and sprinkler, etc. (v) Cultivation of crops like sunflower during peak summer season should be discouraged. Similarly, cultivation of sugarcane in areas facing declining water table should be discouraged. (vi) Serious efforts need to be made on supply side to conserve and harvest maximum of rainwater during the monsoon season.

The article “Beyond Crises: Rethinking Contemporary Punjab Agriculture” by Surinder S. Jodhka (2006)³⁹, zeroes on the sudden spurt of suicides by small and marginal farmers in different parts of India over the last couple of years, which has created a sense of unprecedented crisis in Indian agriculture. The fact that this has happened simultaneously in different regions of India – from Kerala and Karnataka to Maharashtra and Punjab – has alarmed every concerned citizen of India. Understandably made social scientists, activists, and policy makers wonder about the connection it could have with the new economic development policy that the Indian state adopted during the early 1990s, viz. liberalization and related reforms, and opening-up of Indian economy to the processes of globalization. Taking cues from fieldwork in rural Punjab and the available literature on Farmer’s suicides in the state, he argues that the liberalization/ globalization played a crucial role in pushing the agriculture to crisis. He is of the opinion that the contemporary “crisis” of Punjab agriculture has a much broader context and cannot be explained only by referring to its “neglect” during the post-globalization/ liberalization period. The contemporary crisis of agriculture also ought to be seen in the wider context of several other changes that the social structure of rural Punjab, as also the farming communities in the region have been experiencing during the last four or five decades. Though a large portion of population in Punjab continues to live in rural areas, the so-called traditional structure of the village has seen many fundamental changes over the last

three or four decades. Similarly, the farming caste/class has also undergone many internal changes during this period. The internal differentiation that this caste/class has experienced during the Green/post-Green Revolution period has weakened its position in the regional and national politics. Perhaps the growing fragmentation of the agrarian communities has considerably weakened the farmers' movement in the region, and in the country at large.

Sucha S. Gill (2005)⁴⁰ studied and established a close relationship between economic hardship, indebtedness, and suicide. This study found that poor economic conditions led to indebtedness and sometimes led to economic distress causing suicide. In 59.9 percent of cases, it was a quarrel between family members, primarily caused by indebtedness or economic hardship. The pressure of commission agents or banks for the return of loans and fear of loss of social status led to 21.6 percent of the suicides. High interest rates charged on loans and diversion of loans for non-productive purposes or crop failure placed them into a debt trap, creating pressure for suicides.

A study on Indebtedness among Farmers in Punjab by Sukhpal Singh, Manjeet Kaur, H S Kingra (2008)⁴¹ tried to assess the overall debt position of the farmers in Punjab and identify the factors affecting their indebtedness. The study was based on both micro and macro data, micro data was obtained from at village level with the help of well-structured questioner, and macro data was collected from NSSO Reports. They found that 89 per cent of farm households in Punjab are indebted and all farm size categories are equally indebted in percentage terms. The amount of indebtedness was the highest in the southwestern region. The smaller farm households on a per hectare basis were more heavily indebted than other farm size categories. The institutional sources accounted for 62 per cent of total loans to farmers. The share of productive loans was 75 per cent. The tractor farmers were more heavily indebted but had a higher share of institutional loans. The marginal and small farmers with tractors were also heavily indebted and they had a lower share of the institutional loans than the other larger tractor farmers did. Dairy income, off-farm income and education had an inverse relationship with the magnitude of debt,

whereas expenditure on social festivities is directly associated with the amount of debt. The overreaching conclusion is that if Punjab's farmers were to improve the economic condition the following measures are suggested to tackle the situation: (i) regularise and continuously monitor the functioning of non-institutional sources of finance; (ii) improve the functioning and lending procedure of the commercial banks; (iii) strengthen the functioning of cooperatives; (iv) reduce the farmers' fixed costs, the individual farmers' investments in heavy machinery and equipment for which agricultural service centres with village cooperative societies/entrepreneurs should be encouraged from where the farmers can hire in the machinery on payment basis; (v) provide loans to farmers for heavy machinery strictly on economic feasibility; (vi) generate off-farm employment opportunities; (vii) strengthen the dairy sector in Punjab; (viii) implement the crop insurance scheme; and (ix) organise mass campaign against intoxicants and extravagant expenditure on expensive functions.

B B Mohanty, Sangeeta Shroff (2004)⁴² in their study on farmers' suicides in Maharashtra, examined the underlying factors in farmers' suicides in Maharashtra. The study is based on macro and micro data. Macro data is collected from relevant issues of Maharashtra Season and Crop Report, and various issues of Statistical Abstract of Maharashtra State. Micro data was obtained from well structured questionnaire. Their findings indicate that the loss of agricultural income due to adverse weather, market imperfections and consequent indebtedness has pushed the farmers to distress. Social factors too had their share when it comes to their suicides.

Srijit Mishra (2009)⁴³ discusses about the agrarian distress and farmers' suicides in Maharashtra. In this article, he examines the policy and other factors contributing to agrarian distress in Maharashtra State. Data from www.mospi.nic.in/, www.mospi.in and www.mospi_cso_rept_pubn.htm, www.agri.mah.nic.in, central statistical organization, and CSO was used for the study. The striking issues, which the author unraveled, are a) contrasting growth between agricultural and non-agricultural sectors, b) shrinking share of agriculture in the state income, c) the policy domain and institutional arrangements and d) detailed analysis of farmers' suicides in the State. The main part of study deals with suicides in vidarbha, a rain-fed region of

the state. The study shows that the farmers face multiple risks like uncertain weather, volatile markets, lack of proper technology, spurious inputs, and inadequate institutional credits, and indebtedness that turns out to be a critical factor triggering suicides.

A study on agrarian crisis in Punjab: high indebtedness, low return, and farmers suicides by Karma Singh(2009)⁴⁴ analyses the factors behind agrarian crisis in Punjab. Data was collected from statistical abstract, government of Punjab, CACP, and government of India. It shows that there has been a significant deceleration in agricultural growth since the early 1990s. Based on the cost of cultivation data, it is shown that profitability in agriculture has been on the decline due to cost of inputs increasing faster than output prices, combined with stagnation or even decline in yields. Rising cost of capital equipment like tractors, substantial idle capacity in capital equipment, and increasing cost of irrigation due to steep fall in the water tables are other factors that eroded income from agriculture. Though there are numerous factors that lead farmers to suicides, economic stress due to independences is the triggering point. He states that agrarian crisis requires a comprehensive strategy that encompasses not only immediate relief to suicides but also revival of agricultural growth and assured incomes to the farming community. Public investments in agriculture should shoot up to 12.5 per cent of NSDP on a long-term basis that includes marketing infrastructure, which facilitates farmers' organizations to take up the processing and marketing to improve farmers' income.

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CHAPTER-III
EMERGING TRENDS IN AGRICULTURE IN THE STATE OF
ANDHRA PRADESH
(INTER-REGIONAL ANALYSIS IN ANDHRA PRADESH)

3.1. Introduction:

This chapter attempts to examine: a) Extant of Landholding in general and Tenancy in particular of rural areas of Andhra Pradesh, and b) Inter-regional variations of Andhra Pradesh in agricultural production, area, and yield from 1971-80, 1981-90, 1991-2000 and 2001-2009 with the help of growth rates. The pre and post-reform variations in each too find place in this chapter. Further, inter-regional variations in instability of selected crops production, area and yield at state level during the study period.

Data on Landholdings in Andhra Pradesh was collected from Statistical Abstract and Tenancy Data with respect to both household ownership holdings and operational holding from NSSO Rounds and Agriculture Census. The data on the number of households leasing- aspects were covered for 1970-71, 1981-82, 2002-03 and 2005-06 in 26th, 37th, 48th, than 59th NSSO rounds. In order to observe the changes in the agricultural sector and the performance of agriculture in Andhra Pradesh state for the past 39 long years in terms of area, production and productivity. The data on area, production and productivity obtained from Season and Crops Report, Statistical Abstract of Andhra Pradesh, published by Directorate of Economics and Statistics, Government of Andhra Pradesh. Percentages, compound growth rates were calculated. Further, instability of suicides, crops estimated through average annual percentage changes in crop output, production, and area, and then estimated standard deviations was calculated to study the instability variation of selected crops in Andhra Pradesh and across the region.

3.2: Land Utilisation Pattern in Andhra Pradesh:

The nature and the magnitude of economic activities mainly depend upon the quantum of land resources and manner in which these are used. Given the limited area of land, it has to be utilized such a way that it maximizes the current

return from it and does not damage its potentialities for yielding better returns in future years. In a developing economy, like ours, the management of land in an efficient way assumes greater importance to feed the growing population and to strengthen the economy as whole. Therefore, people, particularly in developing countries should use the available limited land resources in a better or planned manner. The economics of land use are concerned with the major uses of land such as crop production, grazing, forestry, constructing the roads, houses and other economic purposes and particularly with the factors, which determine each use and the shift from one use to another. Land, one of the basic resources in the agricultural production process has turned out to be a limiting factor. For instance, the planning commission predicted that the arable land of the country would remain stagnant at 141 million hectares. In fact, the annual growth rate of net sown area (NSA) has sharply declined in recent decades and attained almost zero growth rates in 2004-05¹. This saturation on the extensive use of land frontier, and rising population pressure on land imply the cropping pattern shifts. The farmers are thus forced to choose better profitable crops than the traditional crops in the changing scenario. Before we examine the cropping pattern changes, it is good to observe the land utilization pattern in our country region wise.

Table 3.1 presents the land utilization pattern of Andhra Pradesh during 1970-71 to 2007-08. The geographical area of Andhra Pradesh is 274.40 lakh hectares. The data on land use characteristics reveals that significant changes in the land utilization have taken place over a period of time. It is very much evident from the table that forest area has significantly declined in 1970-71 and then registered a rise in 2007-08. The area under culturable waste has declined from 11.16 lakh hectares in 1970-71 to 6.94 lakh hectares in 2008-09 and its share in total geographical area has declined from 3.8 percent to 2.5 percent during the same period. Current fallow land area gone up from 17.71 lakh hectares in 1970-71 to 25.63 lakh hectares in 1980-81, after wards it has significantly declined up to 2000-01 and again it increased in the following years and reached to 28.19 lakh hectares in 2008-09. And its share in total geographical area has increased from 8.5 percent to 10.3 percent during 1970-71 to 2008-09.

The area under other fallow land (the land, which kept under fallow for more than one year) also registered an increasing tendency during the study period. This reveals that due to low rainfall in Andhra Pradesh, since several years the farmers are unable to cultivate their lands. The land put to non-agricultural uses, mainly for construction of houses, establishing industries, etc. which has been monastically increasing². Its share in total geographical area also increased from 7.6 percent in 1970-71 to 9.5 percent in 2008-09. It is quite natural that the land put to non-agricultural uses has increased with the steep rise in population vis-à-vis urbanization. There is enough evidence in support of large scale conversion of agricultural lands or any other type of land into non-agricultural lands². Interestingly net sown area also has registered a decreasing tendency and during all the periods' area under this category was decreasing, except in 1990-01 and 2000-01.

3.3: Distribution of Land Holdings and Tenancy in A.P:

Having looked into the Land Utilization Pattern in Andhra Pradesh, now we will try to look into the distribution pattern of landholding. The data on landholdings is available from three sources, viz., (i) National Sample Survey (NSS), (ii) Census of India and (iii) Agricultural Census. The NSS reports furnish data on (a) Household Ownership Holdings (HOH), (b) Household Operational Holdings (HOPH) and (c) Operational Holdings (OH). These data are available at state level in each state but not at district level³. The Table 3.2 projects the marginal holdings, which constitute 46.6 percent of total operational holdings but control only 9.3 percent of total operated area in 1976-77. Smallholdings constitute 20.3 percent of total holdings but control 12.8 percent of total operated area. Marginal and small together constitute nearly 67 percent of total holdings but control only 22 percent of operated area in 1976-77. On the other hand, medium and large holdings together constitute about 15 percent of total operational holdings but control more than 56 percent of total operated area during the same period. This indicates that the distribution of land was skewed in 1976-77. By 2000-01, there was a tremendous increase in the number of marginal holdings. Their percentage share in total holdings increased to about 61 percent but area operated under their control has increased to only 21.6 percent of total

operated area. On the other hand, the number of medium and large holdings has declined to 5.7 percent of total operational holdings but controlled nearly 28 percent of total area. If we take large holdings, alone their share is only 0.6 percent of total holdings but controlled nearly 8 percent of total operated area in 2000-01. This clearly indicates that although the number of medium and large holdings declined the area under their control has not declined proportionately. On the other hand, number of marginal holdings has increased from 46.6 percent to 60.9 percent but the operated area under their control has increased to only 21 percent of total operated area in 2000-01. By the 2005-06, there was a tremendous increase in number of marginal and small and both together constitute 83.5 per cent of total holdings but control 48.5 per cent of operated area. On the other hand, medium and large constitute about 4.05 per cent of holdings but control 25.1 per cent of operated area in 2006.

Gini coefficients for operational holdings (rural) at Andhra Pradesh level by NSSO is presented in the table 3.3. As per NSSO, Gini coefficient ratios slightly decreased from 0.603 to 0.599 in 1970-71 to 1981-82 and further decreased to 0.543 in 2002-03 in case of operational holdings. The land distribution is still skewed substantially. The marginal farmers, who constitute very large percentage in number, possess very little cultivated land. Nevertheless, the large farmers, who constitute very small percentage in the number, control more percentage of land. The large farmers respond quickly to the increases in prices of agricultural commodities, as they fetch higher profits for them; moreover, they cultivate those crops, which have high export potential. However, the marginal and small farmers with very little produce at their disposal have to buy the foodgrains from the market⁴. They cannot respond as quickly as large farmers' to policy changes. Thus, the size of the land is also an important factor, which influences the changes in cropping pattern. From the above analysis, it may be concluded that in Andhra Pradesh, net sown area has been declining and on other hand, the land distribution has been skewed. These two factors have strong influencing impact on farmers' choice regarding crops and which ultimately reflects in the cropping pattern changes.

3.4: Agricultural Tenancy in Andhra Pradesh:

The data on tenancy in the NSSO reports contains two types of leasing transactions. Area leased out information is available with references to ownership holdings and area leased-in furnished with respect to operational holdings. As there are differences for area leased-out and leased-in and it is appropriate to deal with tenancy structure, in respect of operational holdings. We take recourse to information on area leased-in for discussion on tenancy⁵. The data on the number of households leasing-in aspects were covered for 1970-71, 1981-82, 1991-92, 2002-03 in 26th, 37th, 48th, than 59th NSSO rounds. Table 3.4 shows aggregates features.

Table. 3.4 shows that Leasing-in Aspects at Aggregate Level in Andhra Pradesh among different types of tenancy in Andhra Pradesh from 1970-71 to 2005-06. In 1970-71, out of the total landholdings, the tenant operational holdings accounted for 21.66 per cent but control only 9.01 per cent of total operated area respectively. By 1980-81 both share was decline to 13.3 and 6.26 per cent respectively. In 1990-91, we noticed that slightly raising trend 14.11 per cent of operational holdings but controlled 9.57 per cent of operated area respectively. Again, in 2002-03, these shares declined to 12.89 and 8.95 per cent respectively. By 2005-06, these shares again decreased to 0.32 per cent of total tenant operational holdings but control only 0.33 per cent of total operated area. Concerning the per cent of pure tenant holdings in the total operational, which is 0.71 per cent in 1970-71, has further increased to 2.32 per cent in 1991-92 and 5.00 per cent in 2002-03. However, the per cent age of share of mixed tenants in the total holdings shows the decline trend from 20.95 per cent in 1970-71 to 11.79 per cent in 1991-92 and further to 7.89 per cent in 2002-03. It appears as though the tenancy has lost its negative character, as losing of land under tenancy is more a reality, because of the fact that land owner have already reached the limited a ceiling. That is how the reported tendency has increased in 1991-92, and the share of pure tenants has been on the increase since 1980-81, further, the share of pure tenant in total tenants shows the same behaviours as share of the pure tenants in total operational holdings.

Table 3.5 shows the distributions of tenant holdings (mixed + pure) and leased area among the broad size-classes for 1970-71, 1981-82, and 1991-92, 2002-03, 2005-06. Considering the entire period, for the total tenant holdings, the marginal and small farms together accounted for 62.69 per cent in 1970-71 and 79.76 per cent in 2002-03, with leased in area shares of 16.82 per cent and 50.86 per cent respectively. Thus over the total period, the marginal and small farms enhance their shares in terms of both tenant holdings and leased in area. Again, between the marginal and the small farms have gained more effectively, both in tenant holdings and leased-in area over the period. Further, in 1970-71, the large farms have share of leased in area is 13.27 per cent, while having only 3.06 per cent of tenant holdings; there after increasing shares of tenants holdings in 1980-81, 1991-92 and again its decreasing share to 1.2 per cent of total tenants in 2002-03. However, the share of leased-in area both marginal and small constitutes about 27.57 per cent. Interestingly, the medium and large farmers together accounted for 46.69 per cent of tenant holdings in 1970-71.

The Distribution of Operational Holdings and Operated Area according to Farm-size among different types of tenancy in Andhra Pradesh from 1970-71 to 2005-06 is presented in the table no 3.6. As regards the share of mixed tenancy, it is noticed that increased tendency from marginal to semi-medium farmers for 1970-71, and 1980-81. Nevertheless, in 1991-92 and 2002-03, there is a tendency to increase on the farm-size ladder (except medium farmers) and even among large farms, the mixed tenant have share to the extent of 21.95 and 30.00 Percent respectively and we notice the same about pure tenants with farm size and operated area in 1970-71. In the later years also, these shares are very smaller, the inverse relation with farm size was maintained. If we look at the share of leased in area, in 1970-71, 1980-81 and 2002-03, there is an inverse relation with farm size. There seems to be no systematic relation existing in other years. But, in 1970-71, the medium farmers and in 1991-92 the large farmers show higher shares thus, in 1991-92, the share of mixed tenant holdings both in terms of number and area is highest among large farmers (22.0 and 13.6 per cent respectively). In 2002-03 also, the share of mixed tenant among large farm is as high as 30.00 per cent, with lease-in area share of 7.31 percent. However, these shares are higher than those

among the medium farms are. It is an indication for the symptoms of the so-called reverse tenancy.

3.5: Performance of Agriculture in Andhra Pradesh State:

Cropping pattern has been defined as the proportion of area under different crops at a particular period of time. A change in the cropping pattern means a change in the proportion of area under different crops. The cropping pattern depends on soil, climate, rainfall and irrigation facilities, prevailing market prices, government policy, farm size and export potential of the crop. For the better understanding, the total crops which have been cultivated in Andhra Pradesh are divided into three groups such as (i) Food grains (ii) Food crops (iii) Non-food crops. (Same classification has been done by Beauru of Economics and statistics, Government of Andhra Pradesh).

Food grains: food grains comprise of rice, wheat, jowar, bajra, ragi, korra, varaga, same, pulses (i.e. horse gram, Bengal gram, red gram and cow gram).

Food crops: besides food grains chillies, sugarcane, vegetables, onions and fruits.

Non-food grains: Non-food grains comprise of cotton, coconut, sesamum, sunflower, castor, fodder crops and tobacco crop.

We examined 39 years of long period (1970-71, to 2008-09) for growth performance of the agricultural sector in Andhra Pradesh. The long period was divided into two sub-periods by looking at the changes in the share of area and output under pre-reform (1971-90) and post reform (1991-09) period. Further, we covered all four sub-periods under pre and post reform period namely 1971-80, 1981-90, 1991-00, and 2001-09. A detailed analysis of the spatial pattern of state and regional levels according to their yield, areas and output levels and changes there in, over various periods was initiated.

The 23 districts have been divided into the following three categories based on agro-economic condition⁶.

A. North-Costal Andhra comprising three districts namely Srikakulam,

- Vijayanagaram, and Visakhapatnam.
- B. South-Costal Andhra comprising two districts of Godavari districts, Krishna, Guntur, Prakasam and Nellore.
- C. Rayalaseema comprising four districts viz., Y.S.R district, Kurnool, Anantapur and Chittoor.
- D. South-Telangana comprising five districts Mahbubnagar, Khammam, Nalgonda, Rangareddy and Hyderabad.
- E. North-Telangana comprising five districts Karimnagar, Warangal, Nizamabad, Adilabad and Medak.

3.6: Trends in Area, Production and Productivity in Andhra Pradesh.

The trends in area, production and productivity for Andhra Pradesh for about nine crops are shown in Tables 3.8. To obtain the trends we have computed compound growth rates for the entire period of three and a half decades of 1971 to 2009. To arrive at correct data we considered the changes in the share of area, output and productivity under pre-reform (1971-90) and post reform (1991-09) period and also the four sub-periods under pre and post reform, 1971-80, 1981-90, 1991-00 and 2001-09 respectively.

The growth rates of area under the nine crops are calculated in Table 3.7. The result indicate that during the first period from 1971-80, there has been negative growth rate for most of the crops like, pulses (0.02), cereals(0.1), food grains (0.09), groundnut (2.78), oilseeds(3.12), chillies(-2.9). For the remaining other crops there has been a substantial increase in the area under these crops. The second period from 1981-90 shows negative growth in the area under all the crops except rice(0.68), pulses(1.23), groundnut (5,48) and oilseed (5.19), chillies (3.91), cotton (5.6).This negative growth in the area under most of the crops during the second sub-period could be attributed to the high fluctuations in rainfall during this period. In the third period, we observe increased growth rates in the area under most of the crops, except for groundnut (-3.46), oilseed (-2.38). This substantial increase in the area especially for maize (5.62), pulses (1.15) and rice (1.46) cotton (5.06), chillies (.9), crop could be because of the shift in the cropping pattern, as is evident in Table 3.8, where we find that there has been a decline in the share of area under food crops grown in this area. Another aspect to

be noted is that the growth rates in the area under cotton, chillies, rice, pulses during the third periods, as the increased in the area under this crop has been considerably more compared to other crops. During the fourth period we observe a further increase in the area under all crops except pulses (-0.1) and chillies (-2.8). If we look at the growth rates of area under different crops during pre and post reform periods the last three and a half decades we find that except for maize, pulses, the growth rate of area under all crops has been negative or decline in post reform period compared with pre reform period.

And also a close look at table 3.7 shows the growth rates of production for nine crops where we find that during the first period, there has been a considerable decline in the production of most of the crops like pulses (-0.54) groundnut(-3.2), oilseeds (-3.53). For the other crops, there has been a growth in production. During the second period, we observe an increase in the production of groundnut, oilseeds, and pulses except maize (-0.02).Where as for all the other crops rate of growth of production has been in the decline. During the third period groundnut, oilseeds there has been a negative growth rate in production, for remaining crops considerably increases in growth rates of production. The fourth period shows a positive rate of growth for almost all the crops. If we look at the rate of growth of production for pre and post reform period for the eleven different crops, we find that except for rice, pulses, maize, there has been a negative or decline growth in the production of all the other crops during post reform period compared to pre reform period.

The growth rates of productivity per hectore of the nine crops are also presented in the same Table. During the first period there has been an increase in the productivity of rice (2.62), maize (2.41), cereals (4.11) and cotton (10), chillies (4.1) where as there is a negative growth in the productivity of all the other crops. During the second period the growth rate in productivity of many of the crops is negative or in the decline except pulses (2.73), groundnut (0.77), chillies (4.54). The third period shows an increase in the productivity growth rates for rice (1.59), maize (4.18), where as for the rest of the crops there is a negative or decline growth rate. During the fourth period, for most of the crops there has been an increase in the growth rate of productivity. If we look at the growth in the

productivity under different crops during pre and post reform period the last three and a half decades we find that except for maize crop the growth rate in the productivity of all the other crops has been decreasing or showing negative trend.

From above analysis, it is clear that as corollary to a fall in the area under crops, the productivity of these crops also decline during post reform period compared to pre-reform period. The fall in area, productivity also reflected in the fall of production in post reform period. One of the significant features in the cropping pattern in Andhra Pradesh, particularly Guntur district is the rise in the area, production, yield of maize due to the supply of maize seed and fertilizer at subsidiary rate that encouraged the farmers to cultivate maize by sparing area under chillies.

3.7: Region -Wise Analysis:

Having looked at the overall growth performance of agriculture sector. Now we take up the study growth performance across regions in Andhra Pradesh.

Table 3.8 illustrates the growth rates of area, productivity and production of crops in North Costal Andhra Pradesh during pre and post-reform period and for four sub-periods under pre and post reform period. During first period from 1971-80, there has been positive growth rates of crop area for the most of the crops likes rice (0.25), maize, (13.17) cereals (0.79) and food grains (0.27) per annum respectively, that of pulses (-0.31), groundnut (-4.72), oilseeds (-2.42) negative growth rates of area during this period. The Second period from 1981-90, we observed that there was a decline or negative growth rates in area under crops like rice (-0.50), cereals (-0.75). Another aspect under this period we noticed was that there was an increase in area under crops like pulses (4.68), groundnut (4.56) and oilseeds (4.92). This substantial increase in area especially under pulses, groundnut, and oilseeds could be attributed to shifts in cropping pattern as we observed for Andhra Pradesh state where we find that there has been decline in area under major crops in this area. During period of 1991-2000, we observed there was a further decline or negative in area of most of the crops. On the contrary the fourth period from 2000-09, shows a positive or increased growth rate for almost all the crops like rice (2.80), maize (9.7), cereals (1.69), pulses

(1.04), and negative growth rates for food crops (-0.87), groundnut (-4.26), cotton (-2.76), oilseeds (-0.4) during this period. If we look at the rate of growth of area for pre and post reform period for the nine different crops, we find that except for maize, there has been a negative or decline growth in the area of all the crops during post reform period compared to pre reform period. Table 3.8 also shows the production growth rates, the first period the growth rates of most of the crops negative or decline except maize (13.78) compared with second period. The third period from 1991-2000, the growth rates of most of the crops negative or decline except (maize (6.29), cotton (2.02) compared with earlier one. The fourth period from 2001-08, the growth rates of all selected crops increased except cotton (0.52) compared with all earlier periods. We also find that growth rates of production during pre and post reform period, the growth rates of most of the crops negative or decline except maize (13.37) during post reform period compared with pre-reform period.

In term of productivity, the growth rates of productivity increased crops like, rice (1.64) than followed by cereals (2.91), groundnut (0.77), and oilseed (0.76) during second period compared with earlier one. For remaining crops, there has been negative growth during second period compared with first period. The third period from 1991-2000, there has been decline growth rates most of the selected crops except maize (4.24), cotton (3.73) compared with earlier period. We observed that during this period crops like, cereals (-1.28) and pulses (-0.63) negative growth rates during third period compared with earlier period. The fourth period from 2001-08, the growth rates of most of the crops increased except maize (2.11), compared with all earlier periods. If we look at growth rates of yield during pre and post reform period, the growth rates of all selected crops negative except maize (6.07) and groundnut (0.14) during post reform period compared with pre-reform period.

From the above analysis, one can infer that North Costal Andhra region the area under crops production and yield per hector showed decline in the first and second sub-periods and a rise in the third sub-period. More specifically the growth rates of rice, maize and cotton increased in the third sub-period in spite of a fall in the growth rates of food grains together. This may be perhaps due to

irrigation of rice, maize under well. However, the application of un-assured means of irrigation and cultivations for groundnut, pulses, and oilseeds and their growth rates indicate the agricultural backwardness of North Coastal Andhra Pradesh.

The growth rates of area under crops presented in Table 3.9 demonstrates that during the first period from 1971-80, there has been substantial increased growth rate for most of the crops like, rice(1.34) maize(3.6), cereals(0.23), food grains (0.16)cotton(16.7). For the remaining crops, there has been a decrease in the area under crops. The second period from 1981-90 shows negative or decline growth rates in the area under all the crops except maize (13.83), pulses (5.8). This negative growth in the area under most of the crops during the second period could be attributed to the high fluctuations in rainfall during this period. In the third period, we observe again a negative decline growth rates in the area under most of the crops. This substantial decreased in the area growth rates especially under all crops could be because of the shift in the cropping pattern here we find that there has been a decline in the share of area under major principal crops grown in this area. Another aspect to be noted is the growth in the area under cotton during the second and the third periods, as the decline in the area under this crop has been considerably more compared to other crops. During the fourth period, we observe a further increase in the area under cotton crop, which is about 2.37 growth rates then followed by rice (3.57), maize (17.56), and cereals (3.74). However, there has been a further decline in the area under most of the other crop like, pulses. If we look at the growth in the area under different crops during the pre and post reform period, the growth rate in the area of all the crops has been negative or decline except maize (11.8) during post reform period compared with pre-reform period.

In the case of production, during first period from 1971-80 the growth rates of production of all selected crops, the growth rates of rice, cereals, food grains, cotton increased to 4.05, 3.71, 1.53, 27.03 from 2.25, 1.41, 0.79, 0.28, that of maize, pulses, groundnut, oilseed decreased to 4.5, 0.26, -3.61,- 3.24 from 7.48, 9.69,7.17,6.77 compared with second sub-period from 1981-90. During the third sub-period from 1991-2000, the growth rates of production decelerated except maize (18.74) compared with all earlier period. While the growth rates of

production during fourth sub-period, all most all crops production growth rates increased except pulses, (0.51) compared with all earlier periods. If we look at the growth in the area under different crops during the pre and post reform period, the growth rate in the area of all the crops has been negative or decline except maize (19.69) during post reform period compared with pre-reform period.

In terms of productivity, the second period from 1981-90, the growth rates of all selected crops decline or negative except groundnut (2.21), oilseeds (2.75) compared with first period. While the growth rates in third period from 1991-00, most of the crops registered positive growth rates crops like, rice (2.15), pulses (1.42), cereals (2.59), groundnut (2.64), and maize (7.17). For remaining crops there has been a negative growth rate of crops like, oilseed (7.65), cotton (-6.84) during the fourth period from 2000-08, all selected crops registered positive growth rates crops like maize(8.7), food grains(1.35), groundnut(3.46), cotton (8.64) compared with all earlier period. If we look at growth rates of pre and post reform period, there has been negative or decline growth rates in all the crops except maize (7.65) and groundnut (3.67). One of the interesting points we noticed during our research is that most of the suicides have occurred during post reform period, that was vividly evident in the drought prone Guntur and Prakasam districts due to cotton and chillies crop failure.

From above analysis one can conclude that the growth rates of area, production of many crops were negative during second and third sub-periods. This was due to the extensive cultivation of aquaculture in this region. As a result during 1980-2000 many crops including rice were neglected in favour of aquaculture. The failure of aquaculture in the late 1990 facilitated the revival of earlier cropping pattern. However fields were not suitable for the cultivations of rice and other traditional crops. This has reduced significantly the cultivable area in south costal region especially during the post reform period and registered a negative trend. From this it is clear that shift from traditional crops to aquaculture and returning back to traditional agriculture without proper land treatments and measures have adversely affected the farmers and farm dependent labourers, though South Coastal Andhra Region is resourced with water. Like an added insult to the injury, the farm sector crisis was further aggravated by improper and

irrelevant governmental agricultural policies which eventually forced farmers to commit suicides in this region.

Table 3.10 presents the compound growth rates of area, production, and yield in Rayalaseema. During the first period from 1971-80, the growth rate of area registered negative trend in crops like, pulses (-1.32), cereals (-2.42), food grains (1.43), groundnut (-1.35) oilseed (-1.58), and cotton (-2.78). Whereas the remaining crops registered positive growth rates specially in crops like rice (0.03) and maize (2). The second period from 1981-90, has experienced negative growth rates except maize (5.13), groundnut (6.35), oilseeds (7.4). The third period from 1991-2000, the growth rates of rice had positive trend (1.8). It was then followed by maize (10.5), pulses (8.83), cotton (5.67), while the other crops like cereals (-1.83), food grains, groundnut (-2.08) and oilseeds (-1.7) had negative growth. During the fourth period from 2000-08, most of the crops growth rates were positive except for cotton. It is very clear from the above data analysis except maize (14.96) most of the crops in the post reform period compared with pre reform period have been forced to register negative growth rates.

Table 3.10 also indicates the growth rates of production for nine crops. Here we find that during the first period there has been a considerable increase in the production of most of the crops like, maize (3.39), cereals (0.88) and cotton (5.3). For the other crops there has been a negative growth in production. During the second period, we observe an increase in the production of rice (1.05), pulses (2.54) and groundnut (6.6), where as for all other crops including groundnut and cotton the production rate has been negative. In the third period groundnut has a negative growth rate in production and all other crops positive growth rates. The fourth period was full of negative growth rate for almost all the crops except groundnut and rice. From the above it is obvious that the rate of growth of production for the last three and a half decades for the nine different crops during pre and post reform period has been a negative one except for the groundnut and rice.

During the first period there has been positive growth in the productivity of rice, maize and cereals, whereas all other crops have been registering negative growth in the productivity. During the second period the growth rate in

productivity of many of the crops like rice, pulses, cereals, food grains, groundnut and oilseeds recorded an increased positive growth, unlike the area and production growth rates. The third period catalogues an increase in the productivity growth rates for rice, pulses, cereals, cotton, oilseeds and maize, whereas the rest of the crops end up in a negative growth rate. During the fourth period, for most of the crops there has been an increase in the growth rate of productivity except for cotton. The above trends confirm the fact that the growth of productivity rates of most crops during pre and post reform periods has been lower than maize (4.45) and pulses (4.92). This understandable trend is vivid in post reform period than in the pre reform period.

The above analysis also brings out the truth that factors like drought, depleted ground water levels and irregular and erratic electricity supply in the Rayalaseema region and very specially in Chittoor and Kurnool districts have adversely not only affected dry land farming but also registered negative growth rates of area, production and yield in crops like groundnut, cotton and pulses. Another interesting change is that there has been a shift from rice to maize in Chittoor which has plenty of tube wells and Kurnool districts where canal water is assured for crops. Oilseeds production too registered all most very same negative growth rates in the pre and post reform period. This is attributed to severe drought conditions. Significantly the production of groundnut in Ananthapur district which is a principal crop in comparison to whole crop pattern in Andhra Pradesh has drastically hit the worst negative trend notes and sent chills into dignified farmers spines which weakened the will and dignity of poor farmers to resort to suicides as a way out and solution for the accumulated loans and investments. This worst scenario is a clarion call for government machinery to initiate immediate humanitarian and longstanding sustainable measures for dry land cultivation in the Rayalaseema Region.

Table 3.11 represents the compound growth rates of selected crops in North Telangana. The different crops growth rate of area during first period from 1971-80, has decelerated as follows for the crops like rice, maize, cereals and pulses from 4.11, 1.07, 0.46 and -0.3 percent to 2.44, -2.12, -2.2 and -2.4 percent per annum respectively. On the other hand that of groundnut and cotton has

accelerated from -7.4 and 6.7 percent to 7.7 and 15.8 percent per annum compared with second period respectively. Most of the crops during the third period have witnessed positive growth rates of area except groundnut (-7.9) compared with all earlier periods. Fourth period is no different from the third period. Hence, growth rate of area of most of the crops is very positive and consoling during pre and post reform periods except cotton (-10).

With regards to production, growth rates of rice, maize, cereals, pulses and food grains there has been a slow down trend from 8.6, 3.6, 5.6, 0.6 and 5.1 percent to 4.8, -0.7, 1.7, -2.6 and 1.53 percent per annum respectively. Surprisingly there has been an acceleration growth rate in groundnut and cotton crops from 7 and 10.1 percent to 8.4, and 28.3 percent per annum during the second period (1971-80) compared to first period (1981-90) respectively. The growth rates of rice (6.6), maize (7.6) and cereals (6.2) stepped up during the third period from 1991-00. This accelerated growth of production came through the improvement in productivity when compared with all earlier periods. Unfortunately the groundnut (-5.3) and cotton (2.4) have registered negative growth rates of production. It might be due to negative growth rates of both productivity and area. The fourth period under from 2001-09, the growth rates of production of most of the crops has an upward growth rate except cotton (-3.9). This positive trend could be attributed to improvement of yield and contribution of area. If one were to conclude from the above data analysis, it may not be out place to acclaim that the accelerated growth of production during pre and post periods is no doubt due to increase in area and quantitative yield. This was obvious in all the crops except cotton.

When it comes to growth rate of productivity, most of the crops like maize and cereals have experienced down trend from 2.5 and 5 percent to 1.4 and 4 per cent per annum, while the growth rates of rice, pulses, groundnut and cotton have accelerated growth rates from 0.08, -0.5, 0.4 and 6.7 per cent to 4.6, -0.2, 0.7 and 15.9 per cent per annum during second period. The third period from 1991-00, most of crops documented positive growth rates of yield except cotton compared with all earlier periods. In fourth period, the growth rates of all most all selected crops have accelerated growth except cotton. The adverse negative growth in the

cotton crops resulted in farmers and farm labourers distress therefore many farmers committed suicides during this period. The above data analysis lends itself to overall productivity growth rates comparison between pre reform period 1971-90 and post reform period 1991-2009. One understands that there has been a negative and slower growth rate in the overall yield.

From above analysis it is apparent that the growth rates of area, production and yield of maize, cereals, and food grains increased during the post reform period since the growth rate of yield per hectare marginally positive for these crops. Another outstanding feature is that the maize crop has vastly penetrated agriculture sector in North Telangana region replacing silently several other traditional minor crops. Initial profits have attracted many more farmers to switch over to cotton thus the cotton crop area has begun to spread and expand. As the cotton crop area was increasing, simultaneously initial costs escalated, yields reduced and profits shranked. Such a vicious scenario landed the farming fraternity in debt traps which spiralled up and turned out to be potential nooses. Hence we registered several suicides.

The Compound growth rates in South Telangana are presented in table 3.12. During the first period from 1971-80 all most all the crops have demonstrated positive growth of area except groundnut (0.69) and cotton (23.7). This trend was missing in the second period from 1981-90. Whereas the third period from 1991-2000 has witnessed positive growth rates in most of the crops like rice, maize, pulses and food. It is very encouraging to know that the fourth period has registered more positive growth rates in comparison to the first, second and third period. If we look at the growth rate of pre-reform (1971-90) and post-reform (1991-08) periods, the growth rates of post reform period is negative or the decline for all most all the crops except maize (10) and pulses (3) in comparison to pre-reform period.

In production, during the first period from 1971-80, the growth rates of production of the most crops like rice, maize, groundnut, cereals and pulses, accelerated from 3.59, 2.37, -0.94, 1.88, -2.07 per cent to 7.72, 7.26, 2.53, 6.07 and -0.26 per cent per annum. On the other hand the production rate of cotton decelerated from 36.7 to 8.7 per cent per annum respectively in comparison to

second period from 1981-90. The growth rates of production for crops like maize, pulses, cereals and cotton have registered escalating trend in comparison to all the previous periods as follows 13.3, 2.97, 5.67 and 9.59 per cent respectively. On the other hand crops like rice and groundnut have spotted decelerated growth rates in comparison to all earlier periods. It is very interesting to know that during 2001-09, the growth rates of most of the crops increased in comparison to all the previous periods except cotton, chillies and oilseeds. If we weigh against post-reform period, all the crops production growth rates were positive and promising during pre-reform period. However, in post-reform period crops like maize (12.8), pulses (8.06) and food grains (2.84) have demonstrated positive trends.

In terms of yield, first period growth rates of rice, maize and pulses have experienced increasing trend from 2.91, 3.73 and -1.25 to 4.64, 4.45, and -0.59 percent respectively. Meanwhile, growth rates of cereals, food grains, groundnut, cotton, chillies and oilseeds were in the declining map when we compare growth rates with second period from 1981-90. The growth rates of third period from 1991-00 of crops like maize, cereals, groundnut and cotton were on the declining track 2.9, 3.2, -0.02 and -1.43 respectively in comparison with earlier periods. On the other hand, growth rates of rice, pulses, food grains, chillies and oilseeds recorded moderate growth trends. During fourth period from 2000-08, most of the crops yield growth rates were on the increasing path when compared with all previous periods. By and large the analysis concurs with negative or declining growth rates of yields during post-reform period in contrast with pre-reform period. This was true in case of all the crops except pulses (4.91) and groundnut (3.65).

From the above analysis one can surmise that the growth rates of area, production and yield of maize and pulses has been positive in the South Telangana Region. This increased growth rates of low valued commercial crops like pulses and maize, is perhaps due to assured sources of cultivation through lift irrigation facility provided by government in Mahabubnagar District. Also silent and unobtrusive invasion of maize into other traditional crops has further hastened the growth rate in the South Telangana Region. In contrast we noticed very same

positive trend in the food grains like rice in Nalgonda and Khammam districts, thanks to assured sources like, open wells, tube wells, watersheds and canals.

3.8: Agricultural Instability in Andhra Pradesh:

Variability in agricultural production consists of variations in area and yield and their interactions. Variation in area under a crop occurs mainly in response to distribution, timeliness and differences in rainfall and other climatic factors, expected price and availability of crop-specific inputs⁶. All these factors also affect the variations in yield. Further, yield also depends on the nature and intensity of the outbreak of diseases, pests, natural disasters like floods, droughts and man-made hazards like indiscriminate use of pesticides, usage of spurious seeds and fertilizers. The above events may affect the crop area and yield in the same, opposite or different way.

From the table 3.13, it is found that instability in area, production and yield of suicides crops in Andhra Pradesh. For cotton, instability in area slightly decreased by 20.15 per cent in 1981-90 compared with 1971-80 and then reduced to 19.61 per cent in 1991-2000 periods, thereafter it has increased to 23.93 per cent in 2001-09. Similarly, instability in production of cotton declined from 69.34 to 55.41 between 1971-80 and 1981-90. In the third period instability in output of cotton crops not only decreased but also turned out to be lower even as compared to earlier periods. In 2001-09, it has increased to 42.91 per cent. In term of yield, variability in productivity of cotton crop registered 43.1 per cent in 1971-80 and decreased to 37.9 per cent in 1991-2000 and then further reduced to 15.6 per cent in 1991-2000. Again it increased to 33.31 per cent in 2001-09. Instability in area under chillies increased by 14.85 per cent between first and second period and it got reduced to 17.77 per cent during first and second period. Instability in yield during the corresponding four periods was not uniform. In the first period it was 13.98 per cent and increased to 34.64 in second period. Chillies production witnessed a decreasing trend in instability from 41.61 per cent in 1971-80 to 19.4 per cent in 1981-90 and then increased to 34.8 per cent in 1991-2000 and further registered positive growth by 48.08 per cent in 2001-09. Variability in groundnut has shown two interesting features. In case of area constant trend was recorded during the first and second periods. It then decreased to 7.68 per cent in 1991-

2000; afterwards it increased to 23.17 per cent in 2002-09. Variability in productivity decreased from 31.3 per cent in 1971-80 to 14.64 per cent in 1981-90 and then increased to 49.63 per cent in 1991-2000 and 70.96 per cent in 2001-09.

3.9: Agricultural Instability at Regional Level in Andhra Pradesh:

Having looked at the overall instability of selected crops. Now we take up the study instability of suicides crops across regions in Andhra Pradesh

It is also evident from the table 3.14 that there is lesser instability for all selected crops in North Costal Andhra Pradesh. Instability in production of selected crops: cotton 66.67 and chillies 17 percent registered respectively during 1971-80. Similarly in 1981-90, instability of selected crops production registered highest percentage in this period compared with earlier periods. During 1991-2000, cotton production instability is very high at 129 per cent due to high area and productivity instability. While chillies production registered lesser percentage compared with cotton during this period. During 2001-09, suicides crops production like cotton and chillies instability in production registered 62.3 and 42 percent respectively. During the same period it is worth noting to know that cotton experienced area led instability and chillies yield led instability.

Table-3.15 shows the instability in area, yield, and production of South Costal Andhra Pradesh. In 1971-80, production instability variability of suicides crops like cotton and chillies registered 179.83 per cent and 54 per cent respectively because of high instability in respective crop yields. In 1981-90, cotton production instability variability is 101 per cent due to instability of productivity and chillies production instability is 42 per cent because of more area instability. Cotton and chillies experienced moderate instability in production at 32.75 and 50 percent respectively in 1991-2000. During the same period it is worth noting to know that cotton experienced yield led instability and chillies area led instability. In 2001-09 the contribution of area and productivity for production instability of suicides crops reveals the fact that cotton and chillies experienced productivity led instability.

Table 3.16 depicts instability in crop output, area and yield for selected crops. The instability of groundnut and cotton is 24 per cent and 41 per cent

respectively in 1981-90 as against of 44.78 and 50.73 per cent in 1971-80. This high fluctuation in 1981-90 is due to more yield fluctuation and to a certain extent of area in case of groundnut and for cotton both area and yield fluctuation. The production instability in groundnut is because of productivity led instability in 1991-2000 but for cotton both area and yield led instability. In 2001-09, groundnut production instability depended mostly on yield led instability and to some extent area led instability and cotton experienced both area and yield led instability in production. Fourth period illustrates a considerable increase in variation of all suicides crops in relation to all periods.

The instability of Area, Production and Yield of suicides crops in North Telangana of Andhra Pradesh is presented Table 3.17. The magnitude of instability in production of cotton and chillies crops declined relatively during 1980-90 when compared to 1970-80 because of the fluctuation of both area and yields turnout. In 1990-2000, all selected crops output registered less instability compared with all earlier periods due to the less instability in area and yield. For cotton and chillies instability of production was 81.52 and 28 per cent respectively in 2001-09. This may be perhaps due to high instability in both area and yield in the case of chillies and high yield and less area instability for cotton.

Instability in area, production and yield of cotton and chillies, experienced at regional level in South Telangana during the past 39 years presented in Table 3.18. The instability of cotton and chillies production recorded 181 percent and 76 percent in 1970-80 because of both area and yield contributed fluctuations in case of cotton and yield contributed fluctuation in chillies. In 1981-90 the production instability of cotton and chillies noticed 32 per cent and 65 per cent correspondingly. This may be perhaps due to both area and yield contributed fluctuations in case of cotton and more yield contributed fluctuations in case of chillies. For cotton and chillies production instability was 68 and 42 per cent correspondingly in 1991-2000. Cotton and chillies experienced area led instability in 1991-2000. Whereas during 2001-09, instability of cotton and chillies production, owed to area led instability.

3.10: Summing up:

There is a vast variation in productivity of crop sector across all regions in the Andhra Pradesh. This clearly calls for a regionally differentiated strategy for future growth and development of agriculture sector in the Andhra Pradesh. Cross classification of all regions according to their productivity levels and link with suicides are presented in the chapter would help to understand the link between productivity and suicides. The analysis highlights important features of those all regions that have been stuck in low productivity.

Table 3.1: Land Utilization Pattern in Andhra Pradesh

Category	1970-71	1980-81	1990-91	2000-01	2008-09
Forests	62.34 (23)	62.13 (22.6)	62.68 (22.8)	61.99 (22.6)	61.99 (22.6)
Barren and uncultivable land	21.01 (8.4)	23.40 (8.5)	20.96 (7.6)	21.00 (7.7)	20.84 (7.6)
Land put to non-agriculture uses	21.22 (7.6)	21.68 (7.9)	23.07 (8.4)	25.19 (9.2)	26.08 (9.5)
Cultivable waste	11.16 (3.8)	8.71 (3.2)	7.80 (2.8)	7.28 (2.7)	6.94 (2.5)
Permanent pastures and other grazing land	10.79 (3.7)	9.28 (3.4)	8.43 (3.1)	6.75 (2.5)	6.76 (2.5)
Miscellaneous tree crops and groves not included in net sown area	2.97 (1.0)	2.69 (1.0)	2.62 (1.0)	2.69 (0.9)	2.78 (1.0)
Current fallows	17.71 (8.5)	25.63 (9.3)	24.85 (9.1)	23.12 (8.4)	28.19 (10.3)
Other fallow lands	8.83 (3.11)	13.51 (4.9)	13.77 (5.0)	14.17 (5.1)	(16.51 (6.0)
Net sown area	117.34 (4.07)	107.38 (39.2)	110.22 (40.2)	112.20 (40.9)	104.31 (38.0)
Total geographical area	274.42 (100)	274.40 (100)	274.40 (100)	274.40 (100)	274.40 (100)
Gross sown area	133.47 (48.6)	122.82 (44.8)	131.93 (48.1)	135.45 (49.4)	125.18 (45.6)
Area sown more than once	16.27 (5.9)	15.44 (5.6)	21.71 (7.9)	24.31 (8.9)	21.91 (8.0)

Source: Statistical Abstract of Andhra Pradesh, 1970-71 to 2008-09.

Note: Figures in the parenthesis indicate the percentages of total geographical area.

Table 3.2: The Structure and Distribution of Operational Landholdings in Andhra Pradesh during 1970-2006

years	Share in Number of Holding					Share in Operated Area				
	Marginal	Small	Semi-medium	Medium	Large	Marginal	Small	Semi-medium	Medium	Large
1970-71	46	18.5	17.4	12.7	4.3	8	11.3	19.2	30.8	30.7
1976-77	46.6	20.3	17.4	12.2	3.4	9.3	12.8	20.8	32.3	24.8
1980-81	51.6	21.6	16	8.8	2.1	13.1	16.8	22.7	27.8	19.5
1985-86	54.1	20.8	15.2	7.98	1.77	14.5	17.3	23.9	27.2	16.9
1990-91	56.1	21.2	14.5	6.93	1.27	16.4	19.5	25.2	26.1	12.8
2000-01	60.9	21.8	12.3	4.4	0.6	21.6	24.7	26.4	19.9	7.5
2005-06	61.6	21.9	12.0	4.0	0.5	22.7	25.8	26.5	19.0	6.1

Source: Directorate of Economics and Statistics (DES), Hyderabad.

Note: 1. Marginal – 0 to 1 hectare; Small – 1 to 2 hectares; Semi-medium – 2 to 4 hectare; Medium – 4 to 10 hectare; and Large – 10 and above hectare; 2.

Table: 3.3: Gini-coefficient of Operational in Andhra Pradesh

Year	Operational holdings*
1970 - 1971	0.603
1980 - 1981	0.599
1990 - 1991	0.576
2002 - 2003	0.543

Source: 1. Report on Some Aspects of Operational Holding; 1970- 71, 26th Round NSSO Report No.215.
 2. Report on Some Aspects of Operational Holding; 1980- 81, 37th Round NSSO Report No.331.
 3. Report on Some Aspects of Operational Holding; 1991- 92, 48th Round, NSSO Report No-407.
 4. Report on Some Aspects of Operational Holding; 2002- 03, 59th round NSSO Report No-492.

Table No: 3.4: Leasing-in Area Aspects at Aggregate Level in Andhra Pradesh from 1970-1971 to 2002-2003.

Item	1970-71	1981-82	1991-92	2002-03
1. Operational Holdings(percent) :				
i. Pure owned	78.34	83.55	81.33	85.24
ii. Pure tenants	0.71	1.04	2.32	5
iii. Owner-cum-tenants	20.95	12.28	11.79	7.89
iv. Others	-	3.13	4.56	1.88
Total	100	100	100	100
2. Percentage of Operated Area:				
a. Owned	90.99	92.98	88.49	90.13
b. Leased-in	9.01	6.23	9.57	8.95
c. Others	-	0.79	1.94	0.92
Total	100	100	100	100
3. Share of Total Tenants in Total Op. Holdings (%)=1(ii)+1(iii)	21.66	13.3	14.11	12.89
4. Leased-in Area (%)=2(b)	9.01	6.23	9.57	8.95
5. Share of Pure Tenants in Total Tenants (%)	3.28	7.82	16.44	38.72
6. Share of Mixed Tenants in Total Tenant Holdings (%)	96.72	92.18	83.56	61.21
7. Total Tenants Holdings (Pure + Mixed) ('00)	9598	6859	9975	8559
8. Total Operated Area Leased-in by Total Tenant Holdings ('00 ha)	9179	6441	8820	7928

Source: 1. Report on Some Aspects of Operational Holding; 1970-71, 26th Round NSSO Report No.215.
 2. Report on Some Aspects of Operational Holding; 1980-81, 37th Round NSSO Report No.331.
 3. Report on Some Aspects of Operational Holding; 1991-92, 48th Round, NSSO Report No.407.
 4. Report on Some Aspects of Operational Holding; 2002-03, 59th round NSSO Report No-492

Table No: 3.5: Share of total Leased-in Area among five broad class in Andhra Pradesh from 1970-71 to 2002-03.

Years	1970-71		1981-82		1991-92		2002-03	
	No %	Area %	No %	Area %	No %	Area %	No %	Area %
Marginal	43.57	13.21	39.63	12.69	43.76	19.64	53.83	24.77
Small	19.94	14.36	24.74	16.4	31.11	24.91	23.97	26.09
Semi-Medium	21.03	25.74	19.08	28.53	19.54	29.16	14.14	25.7
Medium	12.4	33.42	13.49	29.2	4.33	12.91	3.5	10.82
Large	3.06	13.27	13.06	13.18	1.26	13.38	2.6	12.62
Total	100	100	100	100	100	100	100	100

Source: 1. Report on Some Aspects of Operational Holding; 1970-71, 26th Round, NSSO Report No.215.

2. Report on Some Aspects of Operational Holding; 1980-81, 37th Round, NSSO Report No.331.

3. Report on Some Aspects of Operational Holding; 1991-92, 48th Round, NSSO Report No.407.

4. Report on Some Aspects of Operational Holding; 2002-03, 59th Round, NSSO Report No-492.

Table No: 3.6: Distribution of Operational Holdings and Operated Area according to Farm-size among different types of tenancy in Andhra Pradesh from 1970-71 to 2005-06.

Years	Farm-size	Operational Holdings					Operated area			
		Pure owners	Pure tenants	Mixed tenants	Others	Total	Owned	Leased -in	Others	Total
1970-71	Marginal	80.04	0.89	19.07	-	100	85.64	14.36	-	100
	Small	77.43	0.92	21.65	-	100	88.97	11.03	-	100
	Semi-Medium	75.01	0.27	24.72	-	100	89.4	10.6	-	100
	Medium	77.37	0.54	22.09	-	100	80.38	19.62	-	100
	Large	80.89	0	19.11	-	100	95.35	4.65	-	100
	Total	78.34	0.71	20.95	-	100	90.99	0.01	-	100
1981-82	Marginal	86.42	20.09	8.79	2.7	100	90.74	7.71	1.55	100
	Small	80.88	0.12	14.75	4.25	100	91.49	6.65	1.86	100
	Semi-Medium	78.93	0	16.35	4.72	100	90.22	8.43	1.35	100
	Medium	82.22	0.02	16.6	1.16	100	93.78	6.02	0.2	100
	Large	85.72	0	13.87	0.41	100	96.44	3.55	0.01	100
	Total	83.55	1.04	12.28	0.13	100	92.98	6.23	0.79	100
1991-92	Marginal	84.79	1.45	8.97	1.79	100	88	10.72	1.28	100
	Small	75.56	1.38	19.15	3.91	100	86.23	10.22	3.47	100
	Semi-Medium	72.62	0	20.93	6.45	100	87.27	10.65	2.08	100
	Medium	87.9	0.17	11.2	0.03	100	93.51	5.26	1.23	100
	Large	78.05	0	21.95	0	100	85.91	13.61	0.58	100
	Total	81.33	2.23	11.79	4.56	100	88.49	9.59	1.94	100
2002-03	Marginal	85.16	6.75	5.11	3.01	100	86.91	11.97	1.14	100
	Small	85	2.3	12.6	0.1	100	87.8	11.05	1.15	100
	Semi-medium	84.69	3.32	11.89	0.08	100	88.98	10.1	0.93	100
	Medium	91.37	0.65	7.53	0.39	100	94.48	4.39	1.14	100
	Large	70.04	0	30	0	100	92.69	7.31	0	100
	Total	85.24	5	7.89	1.88	100	90.74	8.59	0.92	100

Source: 1. Report on Some Aspects of Operational Holding; 1970-71, 26th Round NSSO Report No.215.
 2. Report on Some Aspects of Operational Holding; 1980-81, 37th Round NSSO Report No.331.
 3. Report on Some Aspects of Operational Holding; 1991-92, 48th Round, NSSO Report No.407.
 4. Report on Some Aspects of Operational Holding; 2002-03, 59th round NSSO Report No.492.

Table No: 3.7: Compound growth rates of Area, Production and Yield in Andhra Pradesh (1971 to 2009)

Crops	Years	1971-80	1981-90	1991-00	2001-09	1970-90	1991-09
		Sub-period under pre-post reform period				Pre-Reform	Post - Reform
Rice	Area	1.6	0.69	1.46	4	0.75	-0.28
	production	4.26	2.9	3.08	6.27	3.67	1.45
	Yield	2.62	1.31	1.59	2.1	2.65	1.74
Maize	Area	1.62	-1.15	5.62	9.39	0.54	6.74
	production	4.08	-0.02	10.04	16.84	2.92	10.44
	Yield	2.41	1.14	4.18	6.81	2.36	3.46
Cereals	Area	-0.1	-2.5	0.38	2.2	-1.25	-0.73
	production	3.99	0.93	3.53	7.08	2.43	2.39
	Yield	4.11	3.54	3.12	4.7	3.73	3.15
Pulses	Area	-0.02	1.23	1.15	-0.1	0.54	1.83
	production	-0.54	4.01	2.09	6.53	3.96	5.28
	Yield	-0.51	2.73	0.92	6.64	3.39	3.38
food grains	Area	-0.09	-1.77	0.58	1.48	-0.91	0.006
	production	3.54	1.22	2.97	7.1	2.5	2.4
	Yield	3.63	3.05	2.37	5.54	3.44	2.41
Ground nut	Area	-2.78	5.48	-3.46	0.76	2.28	-2.85
	production	-3.2	6.29	-3.77	8.66	3.18	-3.75
	Yield	-0.42	0.77	-0.32	7.84	0.87	-0.93
Oilseed	Area	-3.12	5.19	-2.38	1.66	1.84	-1.42
	production	-3.53	6.51	-3.54	13.47	3.05	-1.04
	Yield	-0.43	1.25	-1.18	11.62	1.18	0.38
Cotton	Area	1.98	5.6	5.06	2.39	3.58	1.8
	production	13.1	1.17	3.07	12.7	9.4	4.2
	Yield	10.9	-3.63	-1.88	10.14	5.62	2.39
Chillies	Area	-2.9	3.91	.9	-2.8	0.74	0.1
	production	1.01	10.5	5.8	5.64	6.68	5.66
	Yield	4.1	6.41	4.9	8.7	5.89	5.54

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09 & Statistical Abstract of Andhra Pradesh, Compound Growth Rate calculated using the formula $P_t = P_0 (1+r)^n$:

Table No: 3.8: Compound growth rates of Area, Production and Yield of selected crops in North Coastal Andhra (1971 to 2009)

Crops	Years	1971-80	1981-90	1991-00	2001-09	1971 to 90	1991 to 09
		Sub- Period under Pre-post reform period				Pre-reform period	Post-reform period
Rice	Area	0.25	-0.50	-0.061	2.80	-0.4	-1.05
	Production	-0.29	1.13	-2.18	6.26	2.72	-10.19
	Yield	-0.54	1.64	-2.12	3.33	3.14	0.9
Maize	Area	13.17	4.01	1.95	9.75	6.62	6.87
	Production	13.78	4.25	6.29	12.02	9.51	13.37
	Yield	0.53	-6.77	4.24	2.11	2.71	6.07
Cereals	Area	0.79	-0.75	-1.07	1.69	1.15	-1.33
	Production	1.13	2.14	-2.34	8.28	2.18	-0.87
	Yield	0.33	2.91	-1.28	6.47	1.01	0.46
Pulses	Area	-0.31	4.68	-1.91	1.04	1.16	-1.34
	Production	-0.001	5.01	-2.53	3.45	2.18	-0.88
	Yield	0.34	0.31	-0.63	2.39	1.01	0.46
Food grains	Area	0.27	0.06	-0.37	-0.87	-0.19	-1.00
	Production	0.48	1.00	-1.00	3.37	-0.05	-0.50
	Yield	0.19	0.94	-0.47	2.69	0.90	0.50
Ground nut	Area	-4.72	4.56	-3.8	-4.26	1.84	-5.62
	Production	-7.21	5.36	-4.29	1.33	1.69	-5.49
	Yield	-2.86	0.77	-0.51	5.84	-0.15	0.14
Cotton	Area	NA	NA	-1.71	-2.76	NA	1.52
	Production	NA	NA	2.02	0.52	NA	2.35
	Yield	NA	NA	3.73	2.33	NA	1.62
Chillies	Area	4.7	2.5	-1.6	-3.6	3.8	-3.8
	Production	4.2	7.5	2.7	2.6	10.1	0.3
	Yield	1.7	5.3	4.7	4.5	9.3	4
Oil seeds	Area	-2.42	4.92	-1.61	-0.4	2.05	-3.12
	Yield	-7.11	5.72	-3.88	6.62	1.58	-3.95
	Production	-4.81	0.76	-2.31	7.06	-0.45	-0.85

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09 & Statistical Abstract of Andhra Pradesh, Compound Growth Rate calculated using the formula $P_t = P_0 (1+r)^n$.

Table No: 3.9: Compound growth rates of Area, Production and Yield selected crops in south costal Andhra (1971 to 2009)

Crops	Years	1971-80	1981-90	1991-00	2001-09	1971 to 90	1991 to 09
		Sub- Period under Pre-post reform period				Pre-reform period	Post-reform period
Rice	Area	1.34	0.7	0.61	3.56	1.09	-0.63
	Production	4.05	2.25	2.84	3.81	4.11	1.29
	Yield	2.61	1.54	2.15	0.24	2.98	1.94
Maize	Area	3.6	13.82	10.78	17.56	2.71	11.18
	Production	-94.5	7.48	18.74	27.86	6.13	19.69
	Yield	1.94	-0.05	7.17	8.76	3.33	7.65
Cereals	Area	0.232	-0.89	0.37	3.74	-0.38	-0.54
	Production	3.71	1.41	2.97	5.29	3.29	1.94
	Yield	3.47	2.31	2.59	1.5	3.68	2.5
Pluses	Area	1.33	5.84	0.29	-2.97	2.83	0.75
	Production	0.26	9.69	1.71	0.51	6.54	2.69
	Yield	-1.59	3.63	1.42	3.66	3.6	1.93
Food grains	Area	0.16	0.12	0.16	0.76	0.05	-0.08
	Production	1.53	0.79	1.24	2.13	1.48	0.85
	Yield	1.36	0.66	1	1.35	0.94	0.94
Ground nut	Area	-4.96	4.86	-15.83	4.06	1.83	-10.65
	Production	-3.61	7.17	-13.61	7.66	4.16	-7.34
	Yield	1.42	2.21	2.64	3.46	2.29	3.67
Oil seeds	Area	-3.38	3.92	-4.85	9.38	0.56	-2.08
	Production	-3.24	6.77	-12.13	39.45	3.59	0.81
	Yield	0.14	2.75	-7.65	27.49	3.01	2.95
Cotton	Area	16.7	8.37	-0.97	2.37	10.7	-1.26
	Production	27.03	0.28	-7.75	11.25	13.16	0.63
	Yield	8.78	-7.46	-6.84	8.64	2.66	1.92
chillies	Area	-5.96	6.6	1.6	-0.06	0.14	1.59
	Yield	-2.06	12.03	8.95	6.99	6.92	8.39
	Production	4.56	4.94	6.63	5.03	6.33	4.8

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09 & Statistical Abstract of Andhra Pradesh, Compound Growth Rate calculated using the formula $P_t = P_0 (1+r)^n$.

Table No: 3.10: Compound growth rates of Area, Production and Yield of selected crops in Rayalaseema (1971-2009)

Crops	Years	1971-80	1981-90	1991-00	2001-09	1971 to 90	1991 to 09
		Sub- Period under Pre-post reform period				Pre-reform period	Post reform period
Rice	Area	0.03	-1.69	1.38	2.45	-2.16	-1.72
	Production	0.95	1.05	2.78	7.23	0.01	-0.17
	Yield	0.92	2.78	1.38	4.67	2.21	1.57
Maize	Area	2	5.13	10.58	28.25	2.29	14.96
	Production	3.39	-0.91	14.94	47.68	-0.95	20.21
	Yield	1.37	-5.75	3.68	15.15	2.15	4.49
Cereals	Area	-1.32	-7.35	-1.82	0.1	-3.97	-2.79
	Production	0.88	-3.12	0.78	7.02	-0.79	0.16
	Yield	2.23	4.35	2.65	6.91	3.32	3.34
Pulses	Area	-2.42	-0.12	8.83	6.3	-1.17	9.19
	Production	-3.7	2.54	9.49	13.33	0.04	14.56
	Yield	-1.32	2.66	0.6	6.61	1.23	4.92
Food grains	Area	-1.43	-6.34	0.67	2.95	-3.63	1.05
	Production	0.74	-3	1.45	8.63	-0.75	2.12
	Yield	2.19	3.56	0.76	5.51	2.98	1.06
Ground nut	Area	-1.35	6.35	-2.08	1.42	2.86	-1.54
	Production	-2.47	6.6	-2.54	8.75	3.59	-3.52
	Yield	-1.23	0.23	-0.46	7.22	0.7	-2.01
Cotton	Area	-2.78	-7.01	5.63	-16.91	-4.92	-6.48
	Production	5.3	-5.1	1.64	-11.79	2.52	-8.78
	Yield	-2.49	2.08	-3.78	6.16	7.83	-2.45
Chillies	Area	-0.49	0.53	6.21	-3.47	-1.08	1.5
	Production	8.45	5.08	9.14	5.02	-1.14	8.11
	Yield	8.65	4.41	2.81	7.55	-1.005	6.62
Oil seeds	Area	-0.86	7.4	-1.7	1.23	3.26	-0.72
	Yield	-2.48	7.2	-2.15	8.19	3.8	-2.23
	Production	-1.58	-0.19	-3.2	6.89	0.52	-1.52

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09 & Statistical Abstract of Andhra Pradesh, Compound Growth Rate calculated using the formula $P_t = P_0 (1+r)^n$.

Table No: 3.11: Compound growth rates of Area, Production and Yield of selected crops of in North Telangana. (1971-2009)

Crops	Years	1971-80	1981-90	1991-00	2001-09	1971 - 90	1991 - 09
		Sub- Period under Pre-post reform period				Pre-reform period	Post reform period
Rice	Area	4.11	2.44	4.1	5.76	2.8	1.4
	Production	8.6	4.8	6.6	9.9	5.7	3.3
	Yield	0.08	4.6	6.3	9.4	5.5	3.2
Maize	Area	1.07	-2.12	3.7	7.35	-0.04	4.2
	Production	3.6	-0.7	7.6	13	2.6	7.2
	Yield	2.5	1.4	3.8	5.3	2.7	2.8
Cereals	Area	0.46	-2.2	1.9	3.32	-0.7	0.52
	Production	5.6	1.7	6.2	9	2.9	4
	Yield	5	4	4.2	5.5	3.6	3.4
Pulses	Area	-0.3	-2.4	-2.3	-0.4	-0.5	-1.3
	Production	0.8	-2.6	-2.6	9.6	2.3	2.1
	Yield	-0.5	-0.2	0.09	10.1	2.7	3.4
Food grains	Area	0.3	-2.27	0.93	2.56	-0.66	0.14
	Production	5.16	1.53	5.79	9.09	2.9	3.93
	Yield	4.83	3.9	4.82	6.36	3.59	3.78
Ground nut	Area	-7.4	7.7	-7.9	-2.7	2.5	-7.6
	Production	7	8.4	-5.3	1.5	3.8	-5.3
	Yield	0.4	0.7	2.8	4.3	1.2	2.6
Cotton	Area	3.2	9.2	6.4	5.2	6.1	4.2
	Production	10.1	28.3	2.4	-3.9	5.6	-6.3
	Yield	6.7	15.9	-3.8	-8.7	2.4	-10
Chillies	Area	0.54	2.37	-1.04	-5.87	2.65	-3.08
	Production	11.74	7.03	4.21	1.29	6.7	0.94
	Yield	10.67	3.78	6.44	6.33	3.64	4.7
Oil seeds	Area	-8.2	4.9	-5.7	9.3	0.6	-2.6
	Production	-7.6	8.1	-6.5	22.7	3	1.2
	Yield	0.6	3.1	-0.8	12.3	2.4	3.8

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2007-08 & Statistical Abstract of Andhra Pradesh, Compound Growth Rate calculated using the formula $P_t = P_0 (1+r)^n$.

Table No: 3.12: Compound growth rates of Area, Production and Yield selected crops in South Telangana (1971-2009)

Crops	Years	1971-80	1981-90	1991-00	2001-09	1971 - 90	1991 - 09
		Sub- Period under Pre-post reform period				Pre-reform period	Post-reform period
Rice	Area	2.93	0.64	2.25	6.26	0.23	-0.03
	Production	7.72	3.58	2.91	10.53	3.45	1.2
	Yield	4.64	2.91	0.64	4.02	3.21	1.23
Maize	Area	2.68	-1.31	8.83	9.63	1.51	10
	Production	7.26	2.34	13.36	16.7	4	12.8
	Yield	4.45	3.73	2.99	8.29	2.52	2.16
Cereal	Area	-0.59	-2.49	-0.02	0.89	-1.55	-1
	Production	6.07	1.88	2.97	9.26	2.49	2.44
	Yield	6.7	4.48	3	8.29	4.11	3.48
Pluses	Area	0.33	-0.84	4.02	-1.79	-0.36	3
	Production	-0.26	-2.07	5.67	6.13	2.21	8.06
	Yield	-0.59	-1.25	1.58	8.07	2.59	4.91
Food grains	Area	-0.44	-2.21	0.87	0.05	-1.36	-0.002
	Production	5.74	1.68	3.13	8.87	2.47	2.84
	Yield	6.21	3.98	2.24	8.81	3.89	2.85
Ground nut	Area	-4.12	0.69	-4.16	-1.56	0.26	-5.14
	Production	-0.94	2.53	-4.18	9.4	0.85	-1.68
	Yield	3.3	1.83	-0.02	11.14	0.58	3.65
Cotton	Area	-1.02	23.7	11.16	2.66	10.23	4.3
	Production	36.7	8.7	9.56	14.7	18.9	7.58
	Yield	32.8	12.14	-1.43	11.8	7.88	3.11
Chillies	Area	1.33	2.9	1.3	0.2	3.4	0.63
	Production	12.8	5.7	7.7	6.3	12.5	6.4
	Yield	12.5	2.5	6.6	6.3	8	5.9
Oil seed	Area	-4.8	1.03	-2.08	-1.99	0.2	-2.4
	Production	-3.4	2.6	-3.3	8.3	0.6	0.2
	Yield	1.4	1.6	-1.2	10.5	0.4	2.7

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2007-08 & Statistical Abstract of Andhra Pradesh, Compound Growth Rate calculated using the formula $P_t = P_0 (1+r)^n$.

Table No: 3.13: Instability of Area, Production and Yield of selected crops in Andhra Pradesh.

Crops	Years	1971-80	1981-90	1991-00	2000-09
Rice	Area	7.88	10.3	11.39	17.6
	Production	18.45	31.65	18.19	27.47
	Yield	11.44	21.89	7.85	10.69
Cotton	Area	28.72	20.15	19.61	23.93
	Production	69.34	55.41	39.6	55.91
	Yield	43.1	37.9	21.31	33.31
Chillies	Area	13.41	14.85	21.08	17.77
	Production	43.61	19.4	41.8	48.08
	Yield	33.26	13.98	21.16	34.64
Groundnut	Area	10.52	10.29	7.68	23.17
	Production	40.92	24.21	56.63	93.88
	Yield	31.3	14.64	49.63	70.96

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09, GOAP.

Table No: 3.14: Instability of Area, Production and Yield of selected crops in North Coastal Andhra.

Crops	Year	1971-80	1981-90	1991-00	2001-09
Rice	Area	10.71	64.24	8.53	18.13
	Production	44.26	101.75	29.86	51.41
	Yield	33.85	36.68	20.03	32.33
Chillies	Area	17	6	9	13
	Production	71	29.52	40	42
	Yield	58	24	32	30
Cotton	Area	66.67	50.99	119.38	35.77
	Production	0.00	90.09	199.44	62.37
	Yield	0.00	41.27	72.84	29.18

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09, GOAP.

Table No: 3.15: Instability of Area, Production and Yield of selected crops in South Coastal Andhra

Crops	Year	1971-80	1981-90	1991-00	2001-09
Rice	Area	8.58	7.38	3.85	14.27
	Production	20.07	17.86	10.35	23.67
	Yield	11.59	10.81	7.28	9.37
Chillies	Area	19	25	31	24
	Production	67	42	66	50
	Yield	48	17	35	26
Cotton	Area	62.30	49.28	15.80	26.97
	Production	161.83	101.42	66.75	62.7
	Yield	99.63	52.14	51.81	38.56

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09, GoAP.

Table: 6.16: Instability of Area, Production and Yield of selected crops in Rayalaseema

Crops	Year	1971-80	1981-90	1991-00	2000-09
Rice	Area	11.42	24.16	22.26	39
	Production	22.23	31.20	35.66	55
	Yield	11.00	7.65	13.88	16
Ground nut	Area	10.16	12.75	9.69	27
	Production	55.78	31.52	81.69	156
	Yield	45.60	19.62	70.12	129
Cotton	Area	49.45	30.69	34.11	56
	Production	104.73	64.86	52.68	79
	Yield	55.52	34.56	18.14	23

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09, GoAP

Table No: 3.17: Instability of Area, Production and Yield of selected crops in North Telangana Region.

Crops	Years	1971-80	1981-90	1991-00	2000-09
Rice	Area	34.94	13.6	29.32	40.24
	Production	64.02	23.85	46.99	63.87
	Yield	29.16	12.94	15.65	23.6
Chillies	Area	23	17	15	14
	Production	76	41	41	28
	Yield	54	24	26	14
Cotton	Area	10.85	10.18	12.46	20.3
	Production	69.31	58.46	39.38	81.52
	Yield	60.36	45.83	27.78	61.01

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09, GoAP

Table No: 3.18: Instability of Area, Production and Yield of selected Crops in South Telangana Region.

Crops	Years	1971-80	1981-90	1991-00	2000-09
Rice	Area	25.68	25.27	25.97	26.61
	Production	34.83	31.36	40.26	40.48
	Yield	9.44	6.06	15.34	14.45
Chillies	Area	23	17	25	13
	Production	76	32	42	42
	Yield	53	24	17	30
Cotton	Area	82.29	54.29	43.97	34.84
	Production	181.35	115.55	68.28	63.40
	Yield	99	61.48	24.22	29.34

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09, GOAP

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7. North-Costal Andhra comprising three districts namely Srikakulam, Vijayanagaram, and Visakhapatnam.
8. South-Costal Andhra comprising two districts of Godavari districts, Krishna, Guntur, Prakasam and Nellore.
9. Rayalaseema comprising four districts viz., Y.S.R district, Kurnool, Anantapur and Chittoor.
10. South-Telangana comprising five districts Mahbubnagar, Khammam,Nalgonda, Rangareddy and Hyderabad.
11. South-Telangana comprising five districts Mahbubnagar, Khammam, Nalgonda, Rangareddy and Hyderabad.
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CHAPTER-IV

TRENDS IN FARMERS SUICIDES IN ANDHRA PRADESH, INDIA

4.1. Introduction:

This chapter examines the magnitude, trends and spatial pattern of farmer's suicide-deaths in Andhra Pradesh in particular and India in general from 1997 to 2009. The data on farmers' suicides is collected from various reports of National Crime Records Bureau (NCRB reports) and Revenue Department of Andhra Pradesh. There is only limited literature available on the nature and incidence of farmers' suicide in Andhra Pradesh, particularly in terms of region wise variations. Therefore, in this chapter, an attempt has been made to capture the farmers' suicide trends in Andhra Pradesh in relation to other states of India. A time line analysis of suicides across Andhra Pradesh and India has been attempted to find out whether there is an increase or decrease in the rate of suicides.

4.2: Magnitudes and Trends in Farm/Farmers' Suicides in India: The official data:

The main source of data on farmer's suicides is taken from the annual reports on accidental and suicidal deaths published by National Crime Records Bureau (NCRB) of the Ministry of Home Affairs, Government of India. The report consists of range of tables; one among them is on the distribution of suicides by profession that includes a category for self-employed persons in farming/agriculture. The data is available for thirteen years during 1997- 2009. This period covers the largest part of the economic - reform period in India. During this 13 year period between 1997 and 2009, as many as 21, 6500 farmers have committed suicide in India. (See Table 4.1).

It could be seen from the above table 4.1 the Number of Farmers' Suicides and all-Suicides in India from 1997 to 2009. It is evident from the above table No.4.1 that the total number of farmer's suicides increased from 13622 in 1997 to 16196 in 2008. In the year 1997, the farmers' suicides constituted 14.2 percent out of all suicides in the country. The farm/farmers' suicides have escalated to 15.3 percent in 1998. For the next three years, beginning from 1999 to 2001, the numbers of

farmer's suicides are remained more or less steady at around 15 per cent among all suicides in the country. The year 2002, once again saw an expedited trend of farmer's suicides amounting to 16.3 per cent at all suicides in the country. By 2003, this trend has slightly fallen to 15.1 per cent for farmers' suicides out of all suicides in the country. But in 2004 the suicide trend of farmers showed a steady acceleration to the level of 16 percent among all suicides in the country. However from 2005 to 2008 this trend has slightly reduced from 16 per cent to 12.9 percent for farmers' suicides in the country. There is a slight rising trend in total suicides with accelerating suicide rates, during 1997-98 and again during 2003-06 in India. The overall trend is still rather flat and there is no obvious interior peak. The percentage of farmer suicides is also relatively stable but slowly increasing over time, visibly accelerating in 1997-98 and again in 2004 and in 2005. However, the number fell back to a lower level in 2003, 2007 and 2008.

4.3: Suicides rate among farmers in India from 1997 to 2009:

The suicides rate among farmers-defined as number of farm/farmers' suicides per 100,000 farmers- can be calculated on a reliable base only for 2001 as it is the only year in which we have reliable data available on farmers suicides in the country, and in different States from the Census of India. The 2001 Census provides data on two categories of cultivators: Cultivators among 'main workers' and those among 'marginal workers.' For the first group - a cultivator among main workers - farming is the main activity. The second group includes those who practice cultivation only on an occasional basis. However, both groups get counted as farmers. In order to identify farmers' suicide rate, no of farmers' suicide per 100000 cultivators (main plus marginal workers) is considered. The general suicides rate in the country is calculated based on the number of total suicides per 100,000 populations¹. Based on this, we have calculated the farm/farmers suicides rates and non-farm suicides rate-for all farmers.

The above table presents the distribution of total suicides rate and farmers suicides rates in India from 1997-2009. It is evident from the table 4.2 that during

1997 to 1998 there was an increase in the farmers suicides rate from 10.7 to 12.6.while in the case of all suicides the rate remained as same at 10.8. During 1999, the farmers' suicides rate was at 12.7 percentages and all suicides rate increased to 11.2 percent. In 2000, suicides rate among farmers increased to 13.1, and the rate of all suicides declined to 10.6. The rate of farmers suicides slightly declined to 12.9 and all farmers remained as same at 10.5 respectively in 2001. By 2002, the farmers suicides rates increased to 14.2 and all suicides rates remained as same around at 10.7 respectively. During the period of 2003, the farmers suicides rates declined to 13.5 and all suicides rates remained as same around at 10.8 respectively. By 2004, the farmers' suicides rate increased to 14.4, while in the case of all farmers suicides rate increased to 11.1. But during 2005, all suicides remained as same at 11.1, while in the case of farmers suicides rates declined to 13.5. In the year 2006, suicides rate among farmers remained as same around at 13.5 and among all suicides the suicides rate remained around 11.5. By 2007, farmers suicides rate remained as same at 13.1 and all suicides rates were 11.8 and 11.9 respectively. By 2008, suicides rates among farmers declined to 12.8 and all suicides rates increased to 12.1 and 12.2 respectively.

4.4: Gender composition of farm suicides in the country from 1997 to 2009:

According to NCRB data, there is a clear gender division in the farmers' suicides'. The table shows that it is the male farmers who have largely committed suicides; around 85percent of all farmers suicides are by male farmers. This figure is significantly larger compared to the number and percent of male suicides in the general population during 1997 to 2008.

Table 4.3 presents the number of farmer's suicides and all suicides in India by gender from 1997 to 2008. In 1997, the number of male farmers' suicides constitutes about 20.1percent of all male suicides in the country, while in the case of female farmers constitute 6.1 percent of all female suicides in the country. By 1998, suicides among male farmers increased to 21.1 per cent of all male suicides in the country, while corresponding percent of female farmers' suicides also increased to 7 of total female suicides in the country. From 1999-2001, suicides among male farmers

reduced to 20.3 in 1999; 20.5 in 2000 and 20.9 in 2001 of all male suicides in India, regarding female farmers suicides it reduced to 6.2; it increased to 7.3 in 2000 and it reduced to 6.1 in 2001 of all female suicides in the country. Further, suicides among male farmers increased to 22.1 percent of total male suicides in the country, while in the case of female farmers suicides remained same at 6.5 percent of all total female suicides in the country during the period of 2002. By 2003, suicides among male farmers reduced to 20.9 per cent of all male suicides in the country, while corresponding percent of female farmers' suicides remained same at 6.1percent of total female suicides in the country.

4.5: Regional Patterns in Farm Suicides in India:

There is a high degree of variation concerning the number of farmers' suicides across different states in India. There are certain states where the number of farmer's suicides is significantly much higher, and the problem is much more acute. They are followed by several states which account comparatively lower number of farmer's suicides Moreover, in most of the north-eastern states and union territories the number of farmers suicides can be considered inconsequential.

In order to understand the pattern or trend of farmer's suicides systematically. We have classified the 21 major states in the country into different groups on the basis of four criteria².

- (i). Number of farm suicides in the state;
- (ii). Farm suicide rate (for 2001);
- (iii). Farm suicides as a percent of all suicides in the state; and
- (iv) The trend over 1997-2009 in the number of farm suicides.

On the basis of above criteria, we have identified four different groups of states in the country.

- 1) Group I states: Maharashtra, Karnataka, Andhra Pradesh, Chhattisgarh and Madhya Pradesh. (These states are contiguous and hence form a region.)

- 2) Group II states: Kerala, Tamil Nadu, Goa, Pondicherry, West Bengal and Tripura.
- 3) Group III states: Assam, Gujarat, Haryana and Orissa; and
- 4) Group IV states: Bihar, Jharkhand, Uttar Pradesh, Uttarakhand, Himachal Pradesh, Punjab, Jammu & Kashmir and Rajasthan.

Group-iv constitutes a region or zone consisting of 8 states in North India, largely concentrated in the Gangetic Plain³. Data on the number, rate, intensity and trend in farm suicides in these four groups of states are summarized in two tables.

Of the four groups, table 4.6 shows that it is in the group-1 states, the problem of farmer's suicides are most severe. During the 13 years period of 1997 to 2009, 133559 out of 216500 cases of farmers suicides committed occurred in this States, giving an average of nearly 100,000 per year, which constitutes 21.1 percent of all suicides in this group of States. The other distressing fact that above table reveals in this group-1 states has been an almost constant increase in the number of farmer's suicides over the period of 1997-2009. Table 4.5 tells that the number rate in this group of states is around 25 percent per 100,000 farmers, which is almost twice as high as the all-India average, and the general suicides in this groups which is around 16 per 100,000 persons, which is also significantly higher than the all India average, thus, these figures demonstrate a considerably higher intensity of farmers suicides in this group by showing a significant gap between the farm suicides rate and general suicides; the farmers' suicides are nearly 60 percent higher than the later.

The same Table 4.6 shows that farmers' suicides took place in the group 2 States, which are 9.4 percent of all suicides, during 1997-2009. Though this number is quite substantial, overall trend has been a declining one, except two sharp increases, one in 1998 and the other in 2002. But table 4.5 demonstrates that the farmers' suicides rate for groups 2 states in 2001 is around 29 percent per 100,000 farmers, which is in fact the highest among all the groups. This is because of very high farmer's suicides rates in some of these States. In the case of general suicides rates is concerned, this group of states has witnessed a very high rate, 20.1 per

100,000 persons, which is twice as high as the corresponding all India rates. Consequently, the intensity of farmers suicides i.e., farmers suicides as a percent of all suicides, in this groups is quite low.

The group 3 States indicates that the total number of farmers' suicides is 16070, which is 8.7 percent of all suicides, during 1997-2009. The trend, apart from the three sharp increases in the number of suicides in 1998, 2002, and 2004 has remained on the whole stable after 2004. Table 4.5 demonstrates the all-India average. The level of general suicides rate in this groups of states is quite low, at 10 per 100,000 people, which is nearly as high as the corresponding all- India rate. Thus, the farm suicides rate here is lower than the general suicides rate. These figures show that the intensity of farmers' suicides in this group of states is also not very high.

Group 4 is the largest groups which consist of many States. Table4. 6 presents that the total number of farm suicides in group 4 states is 20829, which is 14 percent of all suicides, during 1997-2009. The trend, apart from three sharp increases in the number in 1998, 2000, 2008. Given the large number of States, some of them are quite big, in this group, these figures can be considered very low in comparative term. Moreover, table 4.5 reveals that the farmers' suicides rate for group 4 States in 2001 is only 2.6 per100,000 farmers , which is the lowest among all the groups. This is also the region where the general suicides rate is lowest, 2.4 per 100,000 persons. Thus, the intensity of farmer's suicides in this group of States is the lowest. It can be said that in this group of States the phenomenon of farmers' suicides is not a major problem, at least in comparison with other groups of States in India.

The table 4.7 presents the percentage share of different groups of States in total suicides among farmers and general population in India from 1997 to 2009. By 1997, among four groups, group one which has highest percentage constitutes 53 percentage, then followed by group two is 27.5percent, group three is 8.8 percentage and group four is 10.7 percentage, out of total farmers' suicides in the country, On the other hand, in the case of general suicides group one constitutes 40.6 percentage, which is followed by group two, group three and group four out of total suicides in

the country. In 1998, the percentage of farmers' suicides in group one states constitutes 53.3 per cent, group two 27 per cent, group three 8.8, and group four 10.6 percentage respectively, of total farmers suicides in India. Regarding general suicides, group one has 41.5 per cent, followed by group two 34.4 per cent, group three 11.9 per cent, and group four is with 10.7 percent of share of all suicides in the country. For the year 1999, group one farmers suicides has increased to 58.6 percentage followed by group two which has declined to 23.1 percentage and group three farmers suicides has declined to 6.5 percentage. While the group four farmers' suicides increased to 11.3 percent out of all farmers' suicides in the country compared with the earlier periods. On the other hand, the general suicides among the group one, increased to 41.7 percentage and then followed by group two which declined to 34.4 percentage, group three also increased to 12.2 percentage and group four is 11.2 percentage out of all suicides in the country. By 2000, among all groups, except in group four, the percent of farmers' suicides have considerably increased compared to the previous years. (Group one farmers suicides has increased to 59.2 percentage, group two farmers' suicides remained same at 23.1 percentage and group three farmers suicides increased to 7.4 percentage.) Whereas, in the case of group four, farmers' suicides decreased to 9.9 percentage out of all farmers' suicides in the country. From the general suicide point of view, among all groups, percentage of suicides in group one increased to 43.4 which is followed by group two which remained more or less same at 34.4 percentage, and group three also remained same at 12.2 percentage. But in group four general suicides declined to 9.1 percent of all suicides in the country. In the year 2001, among all the groups in farmers' suicide, group three and four showed decline trends (7.1 per cent, 8.4 per cent). While group one showed increasing trend (63.2 per cent) and group two continued in same situation (20.8 per cent). With reference to general suicides, the percentage of share of group one States general suicides have increased to 44.2 percentage and group two remained same at 33.4 and also group three same at 12.4 percentage, group four general suicides have declined to 8.3 percentage in total general suicides in the country. By 2002, among four groups of states in farmers suicides in the country, in the group one, farmers suicides have declined to 58.5 percentage then followed by group two farmers suicides, which have

increased to 25.9 percent, and group three remained the same at 7.7 per cent and group four farmers suicides declined to 7.4 per cent out of total farmers suicides in the country, while in the case of general suicides, group one general suicides percentage remained same at 44.7 per cent then followed by group two percentage of general suicides have decline to 32.1 per cent , group three percentage of general suicides is remained same at 12.4 and group four also remained same at 8.9 per cent of all suicides in the country.

4.6: Trends in farmers suicides in Andhra Pradesh:

According to the National Crime Records Bureau (NCRB) data, during the period 1997-2009, in the State of Andhra Pradesh farmers' suicides were 22,182 or 19.4 per cent of the total farmers' suicide in the country. Further, it is seen from the recent NCRB data that the farmers' suicide has declined in the year 2009. In fact there was a 14.6 per cent increase in the farmers' suicide in Andhra Pradesh in 2009 with the total number of farmers' suicide reaching 4,453 (i.e. 26.1 per cent of the total farmers' suicide in India). Within the State of Andhra Pradesh, the bulk of the farmers' suicides occurred in the Telangana and Rayalaseema regions. More precisely, out of the 23 districts of Andhra Pradesh, most of the suicides were in six districts of Andhra Pradesh i.e. Ananthapur, Warangal, Mahabubnagar, and Guntur.

The table 4.8 shows the farmers suicides in Andhra Pradesh from 1997 to 2009. During the year 1998 the number of farmer's suicides in state constitutes about 19.2 per cent in state level, where as in India it constitutes about 13.9 per cent of all farmers' suicides in the country. However it steadily continued at the state level and at national level it reached about 14.8 per cent of all suicides in the country during the period of 1999. The Farmers suicides has increased to 19.7 at State level and 16.7 at National level in 2004. During 2005 farmers suicides rate at State level had slightly reduced and at national level more or less same continued. Thereafter, in 2006, the farmers suicides has increased at state level which registered 19.6 per cent and at national level it showed about 17.7 percent of all suicides in the country.

The number of suicides and suicides rates for farmers and total suicides in Andhra Pradesh from 1998-2009 is presented in Table 4.9. It is evident from the table that during 1998 to 1999 there was an increase in the farmers' suicides rate from 23 to 25, But all suicides rate remained as same at 10.8. By 2000, the farmers' suicides rate has come down to 19.4 while all suicides rate increased to 13.0.compared with earlier period. In 2001, all suicide rates showed increasing trend at 13.8 respectively. On the other hand, farmers suicide rate showed declining trend at 19.2. Thereafter, among these two categories, it is noticed that there is an increasing tendency in all, in 2002. Between 1997 to 2002, farmers' suicide rate reached at peak level .This may be perhaps due to crop failure, drought conditions etc. During the year 2003, the farmers' suicides rate has come down to 22.3. On the other hand, all suicides rates remained as same at 15.0 respectively. During the period of 2004,the farmers suicides rates has increased to 33.9 , in the case of all suicides rates also increased to around at 17.7 respectively. By 2005, the farmers' suicides rate slightly reduced to 31.7 while in the case of all suicides rate reminded same at 17.6. But during 2006, suicides rate among all suicides remained more or less same at 17.4 respectively, while in the case of farmers' suicides rates increased to 33.2. It clearly shows that during the period of 2004 to 2006 there are number of farmers' suicide taken place in this State because of agrarian crisis, the Commission appointed by the Government of Andhra Pradesh claims that Andhra Pradesh is advanced in agrarian crisis⁵. In the year 2007, suicides rate among farmers has come down to 22.9. On the other hand, all suicides noticed that there is an increasing trend. By 2008, farmers' suicides rate has gone up to 26.8 while in the case of all suicides rates were 18.9 respectively. From 2007 to 2009, the farmers suicide rate has moderate increase due to number of measurements taken by government for the revival of agricultural situation at Central and State levels⁶.

4.7: Farmer's suicides in Andhra Pradesh from different sources:

During the decade 1997-2009, the NCRB, an authentic source of suicides by those 'self-employed in farming/agriculture', reported that 22,182 farmers were forced to take the extreme step. But a compilation of the State's statistics for the

period shows the number as 7,683 suicides or just 34.6 per cent of the NCRB figure. There is no proper explanation from official sources on such a wide difference between the sources, except a routine elaboration on how the State machinery meticulously gathers details and verifies the suicides thoroughly by a three-member committee of Revenue Divisional Officer, Deputy Superintendent of Police and Assistant Director of Agriculture. Whatever the methodology, the disparity exposes the attempt to play down the gravity, show a steady decline and take credit for effectively tackling the problem. Surprisingly, the variation remains, though the NCRB relies on data furnished by the State police. What adds insult to injury, however, is the State's glaring attempt to even deny ex gratia to the unfortunate victims of mostly State policies or lack of timely intervention by categorizing the tragedy. Of the 7,683 suicides recorded by it for the decade, only 4,657 were treated as genuine and eligible for relief which meant 21 per cent of the NCRB's total or 60.6 per cent of those reported by the State itself. Another interesting aspect of the 1998-2009 NCRB data is the steady rise in the number of suicides after 2004, when a slew of pro-active farmer-friendly measures, including providing ex gratia were initiated by state government. While the farmer suicides ranged from 1,509 to 1,974 during the period 1998- 2003, it varied from 1,797 to 2,666 in the later years (2004 to 2008).

Table 4.10 presents Farmer's suicides in Andhra Pradesh from different sources like NCRB and government of Andhra Pradesh. In the 1998, according to NCRB, 1813 farmers have committed suicides where as government of A.P provided data on farmers suicides only 157 for this period,(which is just about 8.44 per cent of total suicides)only 108 treated as genuine(or eligible for compensation),which is just 5.74 per cent of total suicides as per NCRB data and 67.97 per cent of reported by government of A.P. During the period of 1999, as for NCRB data on farmers suicides are 1974, whereas government of Andhra Pradesh reported only 253 farmers suicides among these 174 treated as Genuine, which is just 9.15percent of total suicides as per NCRB data and 69.62 percent of farmers reported by government of Andhra Pradesh. In the year 2000, according to NCRB ,1525 farmers are committed suicides where as government of A.P provided data on farmers suicides only 264 for this period,(which is just about 12.54 percent of total suicides)only 190 treated as

genuine(or eligible for compensation),which is just 12.52 percent of total suicides as per NCRB data and 72.08 percent of reported by government of A.P. During the period of 2001, the NCRB, an authentic source of suicides by those 'self-employed in farming/agriculture', reported that 1509 farmers were forced to take the extreme step. But a compilation of the State's statistics for the period shows the number as 354 suicides or just 16.96 per cent of the NCRB figure and 72.52 per cent reported by government of Andhra Pradesh. In the 2002, according to NCRB, 1896 farmers are committed suicides where as govt. of A.P provided data on farmers suicides only 449 for this period,(which is just about 17.14per cent of total suicides)only 317 treated as genuine(or eligible for compensation),which is just 17.14percent of total suicides as per NCRB data and 71.12 per cent of reported by govt. of A.P. Of the 1800 suicides recorded by NCRB for the period of 2003, and 445 farmers suicides reported by government of Andhra Pradesh only 309 were treated as genuine and eligible for relief which meant 17.00 per cent of the NCRB's total or 69.22 per cent of those reported by the State itself. During the period of 2004, the NCRB, an authentic source of suicides by those 'self-employed in farming/agriculture', reported that 2666 farmers were forced to take the extreme step. But a compilation of the State's statistics for the period shows the number as 2053 suicides or just 44.37 per cent of the NCRB figure and 57.76percent reported by government of Andhra Pradesh. In the 2005, according to NCRB ,2490 farmers are committed suicides where as govt. of A.P provided data on farmers suicides only 1039 for this period,(which is just about 42.73 per cent of total suicides)only 625 treated as genuine(or eligible for compensation),which is just 26.10 percent of total suicides as per NCRB data and 61.09 percent of reported by govt. of A.P. in the year 2006,there are 2607 suicides recorded by NCRB and 963 farmers suicides reported by govt. of Andhra Pradesh only out of this 532 were treated as genuine and eligible for relief which meant 21.10 per cent of the NCRB's total and 56.07 per cent of those reported by the State itself. During the period of 2007, the NCRB, an authentic source of suicides by those 'self-employed in farming/agriculture', reported that 1797 farmers were forced to take the extreme step. But a compilation of the State's statistics for the period shows the number as 925 suicides or just 53.38 per cent of the NCRB figure and percent

reported by government of Andhra Pradesh. In the year 2008, according to NCRB ,2105 farmers are committed suicides where as govt. of A.P provided data on farmers suicides only 704 for this period,(which is just about 12.54 percent of total suicides)only 390 treated as genuine(or eligible for compensation),which is just 19.71 percent of total suicides as per NCRB data and 56.93 percent of reported by govt. of A.P. From 1998-2008, 22182 farmers who were self employed in the farming/agriculture sector) committed suicide in AP. And Govt. of AP reported only 7683 suicides for this period (which is just 34.6 per cent of the total suicides). Only 4657 of those suicides are treated as Genuine (or eligible for compensation) which is just 21 per cent of the total suicides as per NCRB data and 60.6 per cent of the suicides as reported by government of Andhra Pradesh.

Table 4.11 presents the regional pattern of farmer's suicides in Andhra Pradesh from 1998 to 2009 in Andhra Pradesh consists of three regions of Andhra Pradesh like Andhra, Telangana and Rayalaseema. There is a high degree of variation in terms of number of farmer's suicides as well as percentage of farm suicides in a three regions of Andhra Pradesh. In Andhra region, out of 4661 farmers suicides in the state it constitutes 9.1 percent while in the case of Rayalaseema it constitutes about 26 per cent and Telangana it constitutes about 64.9 per cent. In Andhra region ,consists of 9 districts ,among all districts in this region Guntur which is a highest number of farmers suicides (203), than followed by Prakasam (89), Krishna(59) and Nellore (26) ,Visakhapatnam(18).Where as in Rayalaseema region consists of four regions, among all districts in this region Ananthapur (554), which is a highest number of farmers suicides in this region than followed by Kadapa (97), Kurnool (421) and Chittoor (140). In Telangana region there are ten districts and in almost all these districts suicides have happened, and Warangal (734), has highest number of farmers' suicides in this region.

4.8: Summing up:

From the above analysis it is noticed that the problem of farm suicides in the country and state of Andhra Pradesh is particularly acute in certain regions. The Group I states-Maharashtra, Karnataka, Andhra Pradesh and Chhattisgarh and Madhya Pradesh-where this problem is very acute. And as we have pointed out above, there is a contiguous, dry, semi-arid, poor, backward region within these states - in the heart land of India-where the problem must be very severe. While in Andhra Pradesh state, backward region within state like Rayalaseema and Telangana and some parts of Andhra region the problem is very severe. The number and rate of farm suicides here must be very high and increasing rapidly; farm suicides here account for a large proportion of such suicides in the country as well as in Andhra Pradesh; and the phenomenon of farm suicides here seems to be divergent from suicides in general.

Table .4.1: Distribution of Number of Farmers' Suicides and all Suicides in India, 1997-2009

Year	Farmers' Suicides		All Suicides
	Number	As a percent of all suicides	Number
1997	13622	14.2	9582
1998	16015	15.3	104713
1999	16082	14.5	110587
2000	16603	15.3	108593
2001	16415	15.1	108506
2002	17971	16.3	110417
2003	17164	15.5	110851
2004	18241	16	113697
2005	17131	15	113914
2006	17060	14.4	118112
2007	16632	13.5	122637
2008	16196	12.9	125017
2009	17368	13.6	127151
Total	216500	14.7	1470024

Source: Data for 1997-2009 derived from National Crime Records Bureau (NCRB) reports (Accidental Deaths & Suicides in India), GOI.

Table. 4.2: Distribution of farmers' suicides rate and all suicides rate in India

Year	Farmers' Suicides		All Suicide	
	Farmers suicides	Suicides rate	All suicides	Suicides rate
1997	13622	10.7	95829	10
1998	16015	12.6	104713	10.8
1999	16082	12.7	110587	11.2
2000	16603	13.1	108593	10.6
2001	16415	12.9	108506	10.5
2002	17971	14.2	110417	10.7
2003	17164	13.5	110851	10.8
2004	18241	14.4	113697	11.1
2005	17131	13.5	113914	11.1
2006	17060	13.5	118112	11.5
2007	16632	13.1	122637	11.9
2008	16196	12.8	125017	12.2
2009	17368	13.8	127151	12.8
Total	216500	-	1470024	

Sources : Data for 1997-2009 derived from National Crime Records Bureau (NCRB) reports (Accidental Deaths & Suicides in India), GOI.

Table.4.3: Distribution of Number of Farmers' Suicides and all Suicides in India by Gender, 1997-2009

Year	Farmers' Suicides				All Suicides			
	Male		Female		A	Male	Female	B
1997	11229	20.0	2393	6.1	82.4	56281	39548	58.7
1998	12986	21.1	3029	7.0	81.1	61686	43027	58.9
1999	13278	20.3	2804	6.2	82.6	65488	45099	59.2
2000	13501	20.5	3102	7.3	81.3	66032	42561	60.8
2001	13829	20.9	2586	6.1	84.2	66314	42192	61.1
2002	15308	22.1	2663	6.5	85.2	69332	41085	62.8
2003	14701	20.9	2463	6.1	85.7	70221	40630	63.3
2004	15929	21.9	2312	5.6	87.3	72651	41046	63.9
2005	14973	20.5	2158	5.3	87.4	72916	40998	64.0
2006	14664	19.4	2396	5.6	86.0	75702	42410	64.1
2007	14509	18.2	2123	5.2	85.0	79295	43342	64.6
2008	14145	17.5	2051	5.0	84.2	80544	44473	64.4
2009	14951	18.3	2417	5.2	86.0	81471	45680	64.0

Sources: Data for 1997-2009 derived from National Crime Records Bureau (NCRB) reports (Accidental Deaths & Suicides in India), GOI.

Note : A = Male Farmers' suicide as a % of all farmers' suicides

B = Male suicide as a % of all suicides

Table. 4.4 : Farmers suicides in selected states and all india,1997-09

States	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Andhra Pradesh	1097	1813	1974	1525	1509	1896	1800	2666	2490	2607	1797	2105	2414
Assam	223	160	82	126	167	271	187	331	229	332	278	197	314
Bihar including	94	127	127	32	88	101	69	44	163	149	86	67	112
Goa	7	5	5	15	18	11	18	8	11	5	0	6	4
Gujarat	565	653	500	661	594	570	581	523	615	487	317	526	588
Haryana	45	185	205	238	145	190	207	160	140	190	179	150	230
Himachal Pradesh	23	28	39	35	22	25	34	52	22	22	15	188	24
Jammu & Kashmir	3	2	3	38	15	16	8	1	2	34	33	6	8
Karnataka	1832	1883	2379	2630	2505	2340	2678	1963	1883	1720	2135	1737	2282
Kerala	1204	1514	1431	1295	1035	1533	1583	903	1118	1124	1232	820	896
Madhya Pradesh	2390	2278	2654	2660	2824	2578	2511	3033	2660	2858	1263	1379	1396
Maharashtra	1917	2409	2423	3022	3536	3695	3836	4147	3926	4453	4238	3802	2872
Orissa	251	418	265	199	256	345	365	379	254	283	240	260	154
Pondicherry	40	128	133	230	91	88	23	145	147	175	197	17	154
Punjab	111	108	87	73	45	40	26	74	47	85	88	66	97
Rajasthan	659	705	724	736	505	587	636	749	461	395	618	796	851
Tamil Naidu	932	1089	804	882	985	1455	1052	1599	1255	426	484	512	1060
Tripura	18	241	97	14	41	41	4	15	29	7		50	45
Uttar Pradesh	568	727	845	735	709	559	428	518	546	462	486	745	656
west Bengal	1539	1457	1240	1377	1246	1518	1036	822	965	1187	1102	759	1054
Other states	98	87	65	79	79	112	84	109	100	67			
All India	13622	16015	16082	16603	16415	17971	17164	18241	17131	17060	16632	16196	17368

Source: Data for 1997-2009 derived from National Crime Records Bureau (NCRB) reports (Accidental Deaths & Suicides in India), GOI

Note; 1. Other states and union territories most of the north-eastern states (Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Sikkim) and union territories (Andaman and Nicobar islands, Chandigarh, Dadar and Nagar Haveli, Daman and Diu, Delhi and Lakshadweep).

2. The states of Chhattisgarh, Jharkand and Utarakhand were formed in 2001 by bifurcating the erstwhile states of UP, Madhya Pradesh, Bihar Uttarkhand and Jharkand, which have been available only from 2001, have been added to UP, Madhya Pradesh, Bihar, respectively.

Table .4.5 : Number and Rate of Suicides for the General Population and Farmers in Different Groups of States according to 2001 census.

Group of States	Number of suicides		Farmers' suicides as a percent of all suicides	Suicide Rate (per 100,000 members)		
	Among farmers	Among all population		In general population	Among all population	
					With all cultivators considered	With only main cultivators considered
1) Group – I States (Maharashtra, Karnataka, Andhra Pradesh, Chhattisgarh & Madhya Pradesh)	10374 (63.2)	47906 (44.2)	21.7	15.6	24.8	28.7
2) Group – II States (Kerala, Tamil Nadu, Goa, Pondicherry, West Bengal & Tripura)	3416 (20.8)	36191 (33.4)	9.4	20.1	28.8	33.6
3) Group – III States (Assam, Gujarat, Haryana, Orissa)	1162 (7.1)	13497 (12.4)	8.6	10.0	6.9	8.9
4) Group – IV States (Bihar, Jharkhand, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, Uttar Pradesh & Uttarkhand)	1384 (8.4)	8983 (8.3)	15.4	2.4	2.6	3.3
All-India	16415 (100.0)	108506 (100.0)	15.2	10.6	12.9	15.8

Source: By K.Nagaraj, 2008.

Table. 4.6: Number of farmers suicides and all suicides among different groups in India from 1997-2009 Percentage Share of Different Groups of States in Total Suicides

Year	Group I States			Group II States			Group III States			Group IV States		
	Farmers' Suicides	All suicides	Farmers' Suicides as a % of All Suicides	Farmers' suicides	All suicides	Farmers' Suicides as a % of All Suicides	Farmers' Suicides	All suicides	Farmers' Suicides as a % of All Suicides	Farmers' Suicides	All suicides	Farmers' Suicides as a % of All Suicides
1997	7236	38910	18.6	3746	33672	11.1	1084	11789	9.2	1458	9909	14.7
1998	8383	43453	19.3	4434	36003	12.3	1416	12443	11.4	1695	11217	15.1
1999	9430	46170	20.4	3710	36943	10.0	1052	13470	7.8	1825	12424	14.7
2000	9837	47157	20.9	3813	35905	10.6	1224	14034	8.7	1649	9843	16.8
2001	10374	47906	21.7	3416	36191	10.6	1162	13497	8.6	1384	8983	15.4
2002	10509	49341	21.3	4646	35418	13.1	1376	13742	10.0	1328	9876	13.4
2003	10825	49211	22.0	3716	36316	10.2	1340	13809	9.7	1199	9741	12.3
2004	11809	51482	22.9	3492	36939	9.5	1393	13912	10.0	1438	9495	15.1
2005	10959	49754	22.0	3525	37870	9.3	1308	13865	9.4	1239	10492	11.8
2006	11638	52043	22.4	2926	38698	7.6	1282	14447	8.9	1147	10653	10.8
2007	11026	53538	20.6	2818	38608	7.2	1014	15383	6.5	1774	15108	11.7
2008	10796	53524	20.1	1704	39392	4.3	1133	16714	6.7	2561	15387	16.6
2009	10737	55991	19.1	3213	39361	8.1	1286	15990	8.0	2132	15809	13.4
Total for 1997-2009	133559	638480	20.1	45159	403316	11.1	16070	183095	8.7	20829	148937	13.9

Source: Data for 1997-2005 derived by K. Nagaraj from NCRB reports (Accidental Deaths & Suicides in India) for those years and extended thereafter with NCRB, ADSI data from years 2006, 2007, 2008 and 2009.

Table .4.7 : Percentage Share of Different Groups of States in Total Suicides among Farmers & General Population in India, 1997-2009

Year	Percentage share of group of states in total Farmers' suicides in the country				Percentage share of group of states in total general suicides in the country			
	Group I	Group II	Group III	Group IV	Group I	Group II	Group III	Group IV
1997	53.1	27.5	8.0	10.7	40.6	35.1	12.3	10.3
1998	52.3	27.7	8.8	10.6	41.5	34.4	11.9	10.7
1999	58.6	23.1	6.5	11.3	41.7	33.4	12.2	11.2
2000	59.2	23.0	7.4	9.9	43.4	33.1	12.9	9.1
2001	63.2	20.8	7.1	8.4	44.2	33.4	12.4	8.3
2002	58.5	25.9	7.7	7.4	44.7	32.1	12.4	8.9
2003	63.1	21.6	7.8	7.0	44.4	32.8	12.5	8.8
2004	64.7	19.1	7.6	7.9	45.3	32.5	12.2	8.4
2005	64.0	20.6	7.6	7.2	43.7	33.2	12.2	9.2
2006	68.2	17.2	7.5	6.7	44.1	32.8	12.2	9.0
2007	66.2	16.9	6.09	10.6	43.6	31.4	12.5	12.3
2008	66.6	10.5	6.9	15.8	42.8	31.5	13.3	12.3
2009	61.8	18.4	7.4	12.2	44.0	30.9	12.5	12.4
For the period 1997-2006	61.9	20.9	7.4	9.6	46.4	29.3	13.3	10.8

Source: Data for 1997-2004 derived by K. Nagaraj from NCRB reports (Accidental Deaths & Suicides in India) for those years and extended thereafter with NCRB, ADSI data from years 2005, 2006, 2007, 2008, and 2009.

Table.4.8 : Distribution of Farmers suicides in Andhra Pradesh from 1997 to 2009

Year	Andhra Pradesh			India		
	Farmers suicides	all suicides	As percent farm suicides in state	Farmers suicides	all suicides	As percent farm suicides in country
1997	1097	-	-	-	95829	-
1998	1813	9433	19.2	12986	104713	13.9
1999	1974	10386	19	13278	110587	14.8
2000	1525	9905	15.3	13501	108593	11.2
2001	1509	10522	14.3	13829	108506	10.9
2002	1896	11693	16.2	15308	110417	12.3
2003	1800	11409	15.7	14701	110851	15.7
2004	2666	13526	19.7	15929	113697	16.7
2005	2490	13442	18.5	14973	113914	16.6
2006	2607	13276	19.6	14664	118112	17.7
2007	1797	14882	12	14509	122637	12.3
2008	2105	14354	14.6	14145	125017	14.8
2009	2414	17368	13.8	17368	127151	13.6
Total	24596	132828	-	216500	1470024	-

Sources: Data for 1997-2009 derived from NCRB reports (Accidental Deaths & Suicides in India) GOI.

Table. 4.9 : Distribution of Number of Farmers' Suicides rate and all-Suicides rate in Andhra Pradesh 1997-2009.

Year	Farmers' Suicides		All Suicide	
	Farmers suicides	Suicides Rate	All suicides	Suicides Rate
1997	1097	-	-	-
1998	1813	23.0	9433	-
1999	1974	25.0	10386	-
2000	1525	19.4	9905	13.0
2001	1509	19.2	10522	13.8
2002	1896	24.1	11693	15.3
2003	1800	22.9	11409	15.0
2004	2666	33.9	13526	17.7
2005	2490	31.7	13442	17.6
2006	2607	33.2	13276	17.4
2007	1797	22.9	14882	19.5
2008	2105	26.8	14354	18.8
2009	2414	30.9	17368	207
Total	22182	-	132828	-
CAGR				

Sources : Data for 1997-2009 derived from NCRB reports (Accidental Deaths & Suicides in India) GOI.

Table.4.10 : Distribution of Farmer's suicides in Andhra Pradesh from different sources

year	NCRB-Framers suicides	Govt. of A.P. Number			Reported suicides as % of NCRB data	Genuine suicides as % reported suicides	genuine suicides as % of NCRB data
		total	genuine	Non-genuine			
1997	1097	-	-	-	-	-	-
1998	1813	157	108	49	8.44	67.97	5.74
1999	1974	253	174	79	13.17	69.62	9.17
2000	1525	264	190	74	17.38	72.08	12.52
2001	1509	354	257	97	23.39	72.52	16.96
2002	1896	449	317	132	24.10	71.12	17.14
2003	1800	445	309	136	24.56	69.23	17.00
2004	2666	2053	1188	865	76.82	57.76	44.37
2005	2490	1039	625	414	42.73	61.09	26.10
2006	2607	963	532	431	37.63	56.07	21.10
2007	1797	925	490	435	51.81	53.28	27.60
2008	2105	704	390	314	34.64	56.93	19.71
2009	2414	417	223	194	-	53.48	-
2010	NA	47	1	46	-	2.13	-
Total	22182	7683	4657	3026	36.46	60.61	20.99

Sources: Data for 1997-2009 derived from NCRB reports (Accidental Deaths & Suicides in India) GOI and Revenue Department of Andhra Pradesh.

Table.4.11 : Distribution of Region –wise farmers' suicides in Andhra Pradesh

Name of the Region	Name of the District	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Costal Andhra	Srikakulam	0	0	0	1	0	0	4	1	0	0	1	0	7
	Vizanagaran	0	0	0	0	0	0	1	0	0	0	0	0	1
	Vishakapatanam	0	0	0	0	0	0	9	5	2	1	1	0	18
	East Godavari	0	1	0	0	1	0	4	2	3	2	1	0	14
	West Godavari	0	0	0	0	0	0	8	0	0	1	1	1	11
	Krishna	1	0	2	0	1	0	24	13	6	4	2	1	54
	Guntur	5	12	1	4	5	1	73	24	31	20	1	26	203
	Prakasam	0	4	4	1	1	0	44	9	8	10	8	0	89
	S.P.S.R. Nellore	0	0	0	1	0	2	13	7	1	2	2	1	29
	Total													
Rayalaseema	Cuddapah	0	0	0	0	1	5	21	17	9	26	17	1	97
	Kurnool	13	6	3	6	11	7	78	64	72	86	57	18	421
	Ananthapur	1	9	21	35	61	72	72	40	53	98	60	32	554
	Chittoor	0	0	2	4	1	4	39	21	25	25	16	3	140
	Total													1212(26)
Telangana	Adilabad	8	16	23	26	20	26	64	62	82	45	13	9	394
	Karimnagar	12	15	15	36	38	36	107	73	48	54	53	10	497
	Khammam	1	7	0	9	4	7	39	23	22	7	12	2	133
	Mahabubnagar	4	15	20	9	22	17	116	57	33	29	0	12	334
	Medak	2	1	5	3	11	25	107	41	19	23	20	14	271
	Nalgonda	10	9	8	15	19	11	87	52	48	10	34	3	306
	Nizamabad	1	3	6	8	24	9	72	27	11	12	4	7	184
	Ranga Reddy	0	4	3	1	5	5	60	40	23	18	8	3	170
	Warangal	50	76	77	98	92	82	146	47	36	3	10	17	734
	Total													
All Total		108	178	190	257	317	309	1188	625	532	490	390	77	4661

Source: Revenue Department, Government of Andhra Pradesh, 2009.

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CHAPTER - V

PROFILE OF SELECTED DISTRICTS

5.1: Introduction:

This chapter presents the basic Agro-economic characteristics of the districts selected for the purpose of the primary data collection. Ananthapur from Rayalaseema region, Warangal from Telangan region and Guntur from Andhra region are selected. This chapter also looks into issues such as the changes in landholding, cropping pattern and instability of selected crops from the selected districts. Data are obtained from statistical abstract and season and crop report, published by government of Andhra Pradesh.

5.2: Salient Features of Agriculture in Ananthapur District²;

Boundaries: Ananthapur District is bounded by Bellary and Kurnool District on the North, Cuddapah and Kolar District of Karnataka on South East and North respectively.

Population: There are 929 inhabited villages, out of 964 total Revenue villages of the District. The number of villages in size group of 500 to 1999 forms 36.71 per cent of the total inhabited villages. The size group of 2000 to 4999 forms 38.64 per cent and the size group of 5000 to 9999 forms 12.81 per cent out of total villages, while 84 villages (9.04 per cent) of total inhabited villages are having population less than 500. There are 26 villages with more than 10000 population excluding Towns. The density of population of the District is 190 per Sq. K.M, against (277) of the State. The percentage of population of Rural and Urban to the total population of the District work out to 75 per cent and 25 per cent in 2001 Census as against 76.5 per cent and 23.5 per cent of 1991 Census. There are 958 Females per 1000 Males in 2001 Census. The work force in the total population of District forms 48.83 per cent as per 2001 census out of which 26 per cent are in the Agriculture Sector.

Land Utilization: The total geographical area of the district is 19.13 lakh Hectares. According to The land utilisation pattern during the year 2006-2007 indicates that the

net area sown is 9.23 Lakh Hectares, Which forms 48.25 per cent of the total area. The total cropped area is 9.75 Lakh Hectares. Area sown more than once is 0.52 Lakh Hectares. The cultivated area of the District is 9.75 Lakh Hectares, of which 7.95 Lakh Hectares is under Kharif and 1.80 Lakh Hectares is under Rabi Season during the year 2006-2007.

Irrigation; The District occupies the lowest position in respect of Irrigation facilities with only 14.08% of the gross cropped area during 2006-2007. During 2006-2007 canals accounted for 17.37per cent, tanks 1.36per cent, Tube wells 70.83per cent, wells 10.02 per cent and other sources 0.42 per cent. All the principal sources except canals are non-precarious.

Rainfall: The District of Ananthapur has a fairly good elevation which provides the District with tolerable climate throughout the year. It has a gradual fall from the South North towards the valley of the Pennar in Peddavadugur, Peddapappur and Tadipatri Mandals. There is a gradual rise in Hindupur, Parigi, Lepakshi, Chilamathur, Agali, Rolla and Madakasira Mandals in the South to join the Karnataka Plateau where the average elevation is about 2000 feet is above the mean sea level. It is about 1100 feet at Anantapur and the lowest 900 feet is at Tadipatri. The Geographical position of the Peninsula renders it, the driest part of the State and hence, Agriculture conditions are more often precarious. Monsoon also evades this part due to its unfortunate location. Being far from the East coast, it does not enjoy the full benefits of North East Monsoon and being cut off by the high western Ghats, the South West Monsoon are also prevented from penetrating and punching the thirst of these parched soils. It is therefore seen; the district is deprived of both the monsoons and subjected to droughts due to bad seasons. The normal rainfall of the district is 553.0 MMs. by which it secures least rainfall when compared to Rayalaseema and other parts of Andhra Pradesh. The normal rainfall for the South West Monsoon period is 338.0 MMs. which forms about 61.2 per cent of the total rainfall for the year. The failure of the rains in this South West monsoon period of June to September will lead the District to drought by failure of crops. The rainfall for North East monsoon period is 156.0 M.Ms. only, which forms 28.3 per cent M.Ms.

of the total rainfall for the year (October to December). The other months are almost dry. March, April and May are warm months when the normal daily maximum temperature ranges between 29.1 C to 40.3 C. November, December and January are cooler months when the temperature falls 15.7 C. Hindupur, Parigi, Lepakshi, Chilamathur, Agali, Rolla and Madakasira Mandals being at High Elevation are cooler than the rest of the Mandals in the District.

River: The important river in the District is Pennar. It has its origin in the Nandi Hills of Karnataka State where it is called "uttara pinakini" and enters this District in the extreme South of Hindupur Mandal and flows through Parigi, Roddam, Ramagiri, Kambadur, Kalyandurg, Beluguppa, Uravakonda, Vajrakarur, Pamidi, Peddavadugur, Peddapappur and Tadipatri Mandals and finally enters Cuddapah District.

Soil: The soils in Ananthapur District are predominantly red except Konekes, Bommanahal, Vidapanakal, Uravakonda, Vajrakarur, Guntakal, Gooty, Pamidi, Peddavadugur, Yadiki, Tadipatri, Yellanur, Peddapappur and Putlur mandals. In these Mandals red and black soils occur almost in equal proportion. Thus 76% red soils, 24% are black soils².

Table. 5.1 depicts the Occupational Distribution in Ananthapur. According to 1991 census, cultivators in the district constitute 35.50 percent and agriculture labours registered 38.62 percent out of the total main workers. As per 2001 census, cultivators in the district slightly reduced to 33.17 percent and also same change taken place in the case of agricultural labours which accounted for 31.42 percent. This may be perhaps due to the fact that cultivators and agricultural labours shifted to non-form sector in this district.

Table 5.2 indicates the details relating to the number of operational holdings and the area operated by different size of holdings in Ananthapur district. As regards the structure of land holdings in Ananthapur district, marginal and small holdings (less than 2 hectare) account for 44.56 per cent of operational holdings with a share of 9.67 of total operated area in the district in 1970-71. As regards bigger holdings, nearly 30.65 per cent of all holdings in the district are above 4 hectare in size, accounting for

75.33 of total operated area in 1970-71. In 2005-06, 66.09 percent of all operational holdings are marginal and small (less than 2 hectare) with the share of operated area being 34.08 percent in the district. Similarly, 9.23 percent of all holdings are medium and large (above 4 hectare) accounting for 33.54 percent of operated area.

5.3: Trends in Area, Production and Productivity in Ananthapur District.

The trends in area, production and productivity for Ananthapur district for about nine crops are shown in Tables 5.3. To look at the trends we have computed compound growth rates for the entire period of three and a half decades of 1971 to 2009, and for the four sub-periods under pre and post reform, 1971-80, 1981-90, 1991-00 and 2001-09.

In 1970-71, cotton showed the highest growth of production (7.8 percent) followed by groundnut and oilseeds (1.13, 1 percent). The highest growth of cotton is contributed by highest growth of yield (8.4 percent) alone, though area growth is negative. As regarded oilseeds, the contribution of area is more due to the production, Even though yield level is negative. Nevertheless, it is rather perplexing that groundnut one of the dominant crops in the state, also experienced a low growth rate of production (1.13 percent) and further, it is disheartening that this result is contributed by low growth rates of both area and yields. In 1980-81, we are happy to see only highest growth rates of production except cotton (-9.8 percent) compared to 1970-71. Groundnut shows highest growth rates of production (6.73 percent) followed by oilseeds (6.8 percent). All these are due to positive growth rates of area alone, though yield growth rates is negative. In 1990-91 the first year of the first decade of economic reform, we are disheartened to see only low growth rates of production excepts cotton (-5.2). If we consider the suicide crops like groundnut and oilseeds growth rates, groundnut growth was led by area growth while oilseeds growth rates led by yield growth rates. In 2000-2001 which tends to show the second decade of economic reforms, which shows the higher growth rates compared to first decade of economic reform. In almost all crops (except cotton), there were positive growth rates of production. Groundnut showed the highest growth (3.77 percent)

followed by oilseeds (4.4 percent). All these are due to positive growth rates of both area and yields. If we consider 39 years of growth rates of crops under pre and post reform period. The post reform period selected crops production growth rates are negative compared to pre- reform period. The negative production growth in crops like oilseeds, and cotton were due to negative growth rates in both area and yields. For groundnut production negative growth is on account of negative growth rate of yield alone, though the growth rate of area positive

5.4: Instability of selected crops in Ananthapur:

Having looked into growth rates of area, production and productivity, now we look at the instability of rice, cotton and chillies.

Table 5.3 shows the instability in area, yield, and production selected crops of Ananthapur. In 1971-80, production instability variability of crops like cotton and groundnut registered 113.15 per cent and 76.38 per cent respectively because of high instability in respective of crop yields. In 1981-90, cotton production instability variability is 104.58 per cent due to instability of productivity and groundnut production instability is 44.52 per cent because of more yield instability. Groundnut and Cotton experienced high instability in production at 126.98 and 36.48 percent respectively in 1991-2000. During the same period it is worth noting to know that groundnut experienced yield led instability and cotton area led instability. The production instability in groundnut is because of productivity led instability in 2001-09 but for cotton both area and yield led instability.

5.2: Warangal District Map³



Sources: <http://warangal.gov.in/>

5.5: Agriculture Situation in Warangal⁴:

Boundaries and Topography: The District lies between the Latitude of 17 – 19’ and 18 – 36 North and longitudes of 78-49’ and 80-43’ East and is above Mid sea level by 870 ft. to 1700 ft. It is bounded on the North by Karimnagar District, on the West by Medak District, On the South by Nalgonda District and by Khammam District on East and South-East. The Geographical area of the District is 12846 Sq.KMs.

Demographic Particulars; With a total population of 32.46 Lakhs 2001 (Census) the district occupies 13Th place in the State of A.P. in its population. There are 252 persons per Sq. KM in the District as against 277 in the state, 19.2 per cent of its total population is living in Urban area.

Human resources - work force; Warangal city is classified as Municipal Corporation. The working population in the district is 15.66 lakhs, which is 48.25 % of the total population. The workers in agricultural sector are 6.57 lakhs forming 20.25 per cent of the total population. The remaining 9.09 lakhs are the workers engaged in non-agricultural sectors comprising of 28 per cent of the total population of the district. The non workers population is 16.80 lakhs constituting 51.75 per cent of the total population.

Demography: The District comprises of 50 Mandal Parishads or otherwise (51) Tahsils and 1014 Gram Panchayats, One Municipal Corporation and one Municipality, of which there are (25) Major Grama Panchayats and 988 Minor Grama Panchayaths.

Natural resources: The Forests of the District come under the category of tropical dry deciduous and tropical forest types. There are varying types of crops of all ages, classes with intermixed patches of different types and qualities. Thus it is quite common to find good quality of valuable teak mixed up with valueless types of poor quality species. The important and valuable species commonly found are teak, Bijasal, Nallamaddi, Boja, Channagi, Turuwaram, Shisham, Station Bandar, Bamboo and Abnus varieties. In Warangal District there are 759 Minor Irrigation sources and

2736 Panchayath Raj Kuntas providing irrigation facility to 183902 acres and 74956 acres respectively.

Table. 5.5 depicts the Occupational Distribution in Warangal district. According to 1991 census, cultivators in this district constitute 32.42 percent and agriculture labours registered 42.08 percent out of the total main workers. As per 2001 census, cultivators in the district slightly increased to 34.48 percent while agricultural labours slightly reduced to 31.42 percent. This may be perhaps due to fact that agricultural labours shifted to cultivators in this district.

Table. 5.6 shows the distribution of operational holdings and operated area in Warangal district. It could be seen from the Table 5.6 that the marginal holdings constitute 47.01 percent of total operational holdings but control only 8.48 percent of total operated area in 1970-71. Small holdings constitute 19.89 percent of total holdings but control 11.5 percent of total operated area. Marginal and small together constitute 66.9 percent of total holdings but control only 19.98 percent of operated area in 1970-71. On the other hand, medium and large holdings together constitute about 16.48 percent of total operational holdings but control more than 61.21 percent of total operated area during the same period. This indicates that the distribution of land was skewed in 1970-71. By 2005-06, marginal and small together constitutes nearly 84.04 per cent of total operational holdings but control only 44.76 per cent of operated area in 2005-06. On the other hand, medium and large holdings together constitute about 5.26 percent of total operational holdings but control more than 30.94 percent of total operated area during the same period.

5.6: Trends in Area, Production and Productivity in Warangal district:

The trends in area, production and productivity for Warangal district for nine crops are shown in Tables 5.7. To look at the trends we have computed compound growth rates for the entire period of three and a half decades of 1971 to 2009, and for the four sub-periods under pre and post reform, 1971-80, 1981-90, 1991-00 and 2001-09 and also for the pre- reform period 1971-1990 and post reform period 1991-2009 for 9 crops.

The above table gives the compound growth rates of area, yield, and production in Warangal district from 1971 to 2009. in Table 5.7 shows that during the first period from 1971-80; there has been positive growth rate for most crops like, rice, pulses, maize, and cotton. On the other hand, there have been negative growth rates for crops groundnut and oilseeds. The second sub-period from 1981-90 shows negative growth in the area under most of the crops except groundnut and oilseed, cotton, rice. This negative growth in the area under most of the crops during the second sub-period could be attributed to the high fluctuations in rainfall and drought conditions during this period. In the third sub-period, we observe again negative growth rates of area under most of the crops like pulses, groundnut and oilseeds. While crops like maize and rice, cereals crops show increasing trend. Because of the shift in the cropping pattern as we have observed in Table 5.7, another aspect to be observed the growth rates of area under groundnut during the second and the third sub-periods, decline and it has been considerably more compared to other crops. During the fourth sub-period, we observe a further decline or negative growth rates of area under pulses, groundnut, and oilseed crops. On the other hand, the growth rates of area under all selected crops showed upward trend except rice, cereals, and maize.

If we look at the growth rates of area under different crops during pre and post reform period the last three and a half decades we find that except for maize, cereals the growth rates of area declined in post reform period compared to pre reform period.

The growth rates of productivity of the nine crops are also presented in Table 5.7 During the first sub-period there has been an increase in the productivity of rice, pulses, cereals, groundnut, cotton, where as there is a negative growth in the productivity of all the other crops. During the second sub-period the growth rate in productivity of many of the crops like rice, maize, cereals, groundnut are showing an increased trend. The third sub-period shows an increase in the productivity growth rates for groundnut, cotton whereas for the rest of the crops there is a negative or decline growth rates. During the fourth sub-period, for most of the crops there has been an increase in the growth rate of productivity except for maize. If we look at the

growth in the productivity under different crops during pre and post reform period the last three and a half decades we find that except for groundnut, cereals the growth rate in the productivity of all the other crops has decreased or negative in the post reform period(1991-09) compared with pre-reform period(1971-90).

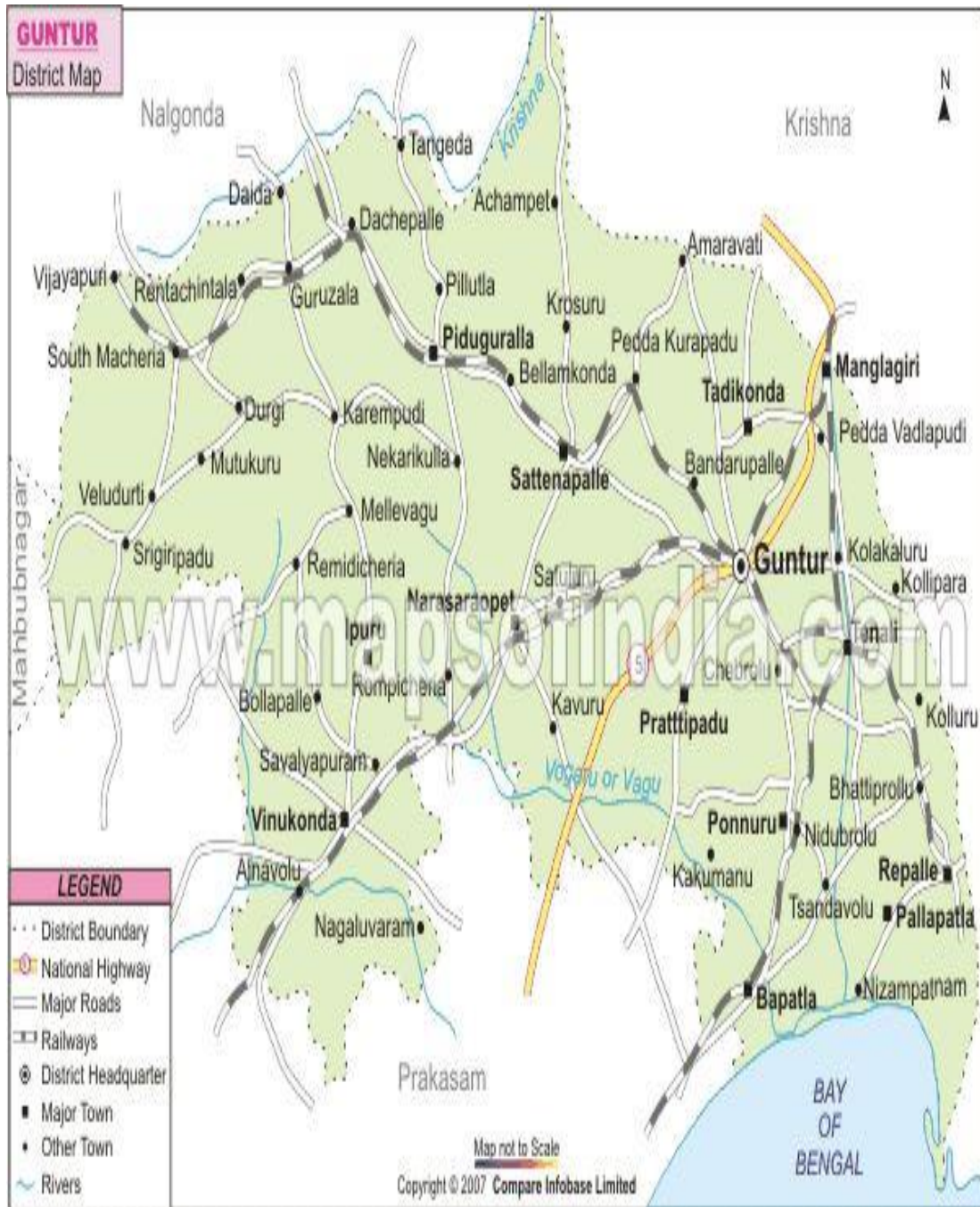
Table 5.7 also shows the growth rates of production for nine crops where we find that during the first sub-period there has been a considerable increase in the production of most of the crops like, Pulses, cereals. For the other crops there has been a decline or negative growth in production compared with second sub-period. During the third sub-period rice, maize and cereals there has been a positive growth rate in production, for remaining crops considerably negative or decline growth rates of production. The fourth sub-period shows a positive growth rate for almost all the crops. If we look at the rate of growth of production for pre and post reform period for the 9 different crops, we find that except for rice, pulses, cereals and cotton there has been a negative or decline in growth in the production of all the other crops during post reform period compared to pre- reform period.

5.7: Instability of selected crops in Warangal:

Having a looked into growth rates of area, production and productivity, now we look at instability of rice, cotton and chillies.

Table. 5.3 shows the instability in area, yield, and production of Warangal district. In 1971-80, production instability variability of selected crops like cotton and chillies registered 117.52 per cent and 95.35 per cent respectively because of high instability in respective crop yields and area. In 1981-90, cotton production instability variability is 157.43 per cent due to instability of both area and productivity. For chillies production instability is 78.23 per cent because of more area instability. Cotton and chillies experienced moderate instability in production at 46.93 and 53.23 percent respectively in 1991-2000. During the same period it is worth noting to know that cotton and chillies experienced yield led instability. In 2001-09 the contribution of area and productivity for production instability of selected crops reveals the fact that cotton and chillies experienced productivity led instability.

5.3: Guntur District Map⁵



Source: <http://www.guntur.nic.in>

5.8: Silent feature of Guntur district ⁶:

The district is bounded on the North by Krishna and Nalgonda districts, on the West by Prakasam and Mahaboobnagar districts, on the South by Prakasam district and on the East by Krishna district and Bay of Bengal. It is situated between 15-18 and 16-50 of the Northern Latitude and 70-10 and 80-55 of the Eastern Longitude

Demographic Particulars: The population of the district was 44, 65,144 with a density of 394 per Sq.Km in 2001. The percentage of literacy was 55.00 and the percentage of urban population to total population was 28.80.

Land Utilisation: The total geographical area of the district is 11,32,823 hectares. During the year 2003-04 the area covered by forest was 161940 hectares which forms 14.30 per cent to the total geographical area. The net area sown was 5, 87,231 hectares forming 51.84 per cent to the total geographical area. The total cropped area in the district is 7, 66,883 hectares. The area sown more than once during the year was 1, 79,652 hectares.

Mineral Resources: The district is rich in mineral resources. The principal minerals available are Limestone, Lime kankar, Napa slabs, Copper and Lead. Limestone is being utilized by the cement factories of Machearla and Tadepalli. There are copper mines at Agrigundala of Ipur mandal.

Climate: The normal rainfall of the district is 851.00M.M. the climate is generally warm in summer and the heat is very severe in Rentachintala, where the maximum temperature in the State is recorded.

Rivers: The important Rivers and rivulets in the district are the Krishna, the Naguleru, the Chandravanka and Gundlakamma. The river Krishna travels about 250 Kms, through the district along the northern boundary of the district.

Irrigation: The two Major irrigation projects in the district are 1) Old Krishna Ayacut, now renamed as Prakasam Barrage with an ayacut of 202032 hectares and 2) Nagarjuna Sagar Project with an ayacutt of 254583 hectares. Both the projects are

constructed on the river Krishna. A medium Irrigation channel by name Guntur Branch Canal (GBC) having an ayacutt of 10823 hectares and the Minor Irrigation sources like tanks, filter points, tube wells etc., are providing irrigation.

Soils: The soils in general are very fertile and they are broadly classified as Black cotton, Red loamy and sandy loamy. Black cotton area is in 70 per cent, Red loamy in 24 per cent and sandy loamy in about 6 per cent of the area in the district.

Crops: The predominant crops grown in the district are paddy, jowar and bajra among cereals, blackgram, greengram and redgram among; pulses, cotton, chillies, turmeric and tobacco among non-food and commercial crops.

Table. 5.9 presents the Occupational Distribution in Guntur district. According to 1991 census, cultivators in this district constitute 20.46 percent and agriculture labours registered 51.48 percent out of the total main workers. As per 2001 census, cultivators in the district slightly reduced to 19.84 percent and also same is in the case with agricultural labours which accounted 44.57 percent. This may be perhaps due to fact that cultivators and agricultural labours shifted to non- form sector in this district.

Table. 5.10 shows the distribution of number of operational holdings and operated area in Guntur district. It could be seen from the Table 5.7 that the marginal holdings constitute 52.21 percent of total operational holdings but control only 14.56 percent of total operated area in 1970-71. Small holdings constitute 22.14 percent of total holdings but control 18.17 percent of total operated area. Marginal and small together constitute nearly 74.35 percent of total holdings but control only 32.73 percent of operated area in 1970-71. On the other hand, medium and large holdings together constitute about 10.24 percent of total operational holdings but control more than 42.41 percent of total operated area during the same period. This indicates that the distribution of land was skewed in 1970-71. By 2005-06, marginal and small together constitutes nearly 88.87 per cent of total operational holdings, control only 60.78 per cent of operated area in 2005-06. On the other hand, medium and large

holdings together constitute about 2.49 percent of total operational holdings but control more than 15.24 percent of total operated area during the same period.

5.9: Trends in Area, Production and Productivity in Guntur District:

The trends in area, production and productivity for Guntur district for nine crops are shown in Tables. 5.11. To look at the trends we have computed compound growth rates for the entire period of three and a half decades of 1971 to 2009, and for the four sub-periods under pre and post reform, 1971-80, 1981-90, 1991-00 and 2001-09. And also for the pre- reform period 1970-1971 and post reform period 1991-2009.

It could be seen from above table that compound growth rates of area, yield, and production in Guntur district from 1971 to 2008. The growth rates calculated in Table. 5.11 show that during the first period from 1971-80; there has been accelerated growth rate for most crops like, rice, pulses, maize, and cotton. For remaining crops there has been a negative or declined growth rates. The second sub-period from 1981-90 shows negative growth rates of area under most of the crops except groundnut and oilseed, cotton, rice. This negative growth in the area under most of the crops during the second sub-period could be attributed to the high fluctuations in rainfall and drought conditions during this period. In the third sub-period, we observe again a negative decline in the area under most of the crops like pulses, groundnut, and oilseeds there is a substantial increase in the area especially under maize and rice, cereals crops which could be because of the shift in the cropping pattern as we have observed in Table. 5.11. During the fourth sub-period, we observe a further decline or negative growth rates in the area under pulses, groundnut, and oilseed crop. However, there has been a further increase in the area under most of the other crops, except rice, cereals, and maize. If we look at the growth of area under different crops during pre and post reform period the last three and a half decades we find that except for maize and cereals the growth rate of area negative in post reform period compared with pre reform period.

The growth rates of productivity of the nine crops are also presented in Table. 5.11 During the first sub-period there has been an increase in the productivity of rice,

pulses, cereals, groundnut, cotton, where as there is a negative growth rates of productivity for crops like, maize, oilseed. During the second sub-period the growth rates of productivity of many of the crops like rice, maize, cereals, groundnut and show an increasing trend. The third sub-period shows an increase in the productivity growth rates for groundnut, cotton whereas for the rest of the crops there is a negative or decline growth rates. During the fourth sub-period, for most of the crops there has been an increase in the growth rate of productivity except for maize. If we look at the growth rates of productivity under different crops during pre and post reform period the last three and a half decades we find that except for groundnut, cereals the growth rate in the productivity of all the other crops has been decreased or negative in post reform period(1991-09) compared to pre-reform period(1971-90).

Table 5.11. Also shows the growth rates of production for nine crops where we find that during the second sub-period there has been a considerable increase in the production of most of the crops like. Rice, Pulses, cereals, groundnut, oilseeds and that of decrease in the production crops like cotton compared to first sub-period. During the third sub-period for rice, maize and cereals, pulses there has been a positive growth rate in production and for remaining crops like groundnut, cotton oilseeds there was considerable negative growth rates. The fourth sub-period shows a positive growth rate for almost all the crops excepts pulses. If we look at the rate of growth of production for pre and post reform period for the nine different crops, we find that except maize there has been a negative or declined growth in the production of all crops during post reform period compared to pre- reform period.

5.10: Instability selected crops in Guntur:

Having a looked into growth rates of area production and productivity, now we look at instability of rice, cotton and chillies.

Table 5.12 depicts instability in crop output, area and yield in Guntur district. The instability of cotton and chillies is 36.82 per cent and 29.37 per cent respectively in 1981-90 as against of 244.98 and 60.43 per cent in 1971-80. This high fluctuation in 1971-80 is due to more yield fluctuation and to a certain extent of area in case of

cotton and for chillies both area and yield fluctuation. The production instability in cotton is because of productivity led instability in 1991-2000 but for chillies both area and yield led instability. In 2001-09, cotton production instability depended mostly on yield led instability and to some extent area led instability and chillies experienced both area and yield led instability in production. Fourth period illustrates a considerable increase in variation of all suicides crops in relation to all periods.

5.11:Summing up:

From the above analysis it is discourse and insights from three districts in Andhra Pradesh. Cross classification of all three districts according to their productivity levels and link with suicides are presented in the chapter would help to understand the link between productivity and suicides. The analysis highlights important features of those all regions that have been stuck in low productivity.

Table.5.1: Occupational Distribution in Ananthapur

Years	Cultivators	Agricultural labour	Total Workers
1991	490385 (35.50)	533512 (38.62)	1381548
2001	488056 (33.17)	462292 (31.42)	1471218

Source: Statistical Abstract- 2009, Directorate of Economic and Statistical Organisation, Government of A.P.

Table.5.2: The Distributions of Number and Area of Operational Holdings according to Size in Ananthapur.

Years	Share in Number of Holding				
	Marginal	Small	Semi-medium	Medium	Large
1970-71	24.08	20.48	24.79	20.2	10.45
1995-96	31.38	27.47	25.41	12.59	3.15
2000-01	34.46	31.02	24.43	8.59	1.50
2005-06	34.45	31.67	24.62	8.04	1.19
	Share in Operated Area				
1970-71	2.64	7.03	15.01	28.58	46.75
1995-96	6.87	16.5	26.42	30.04	20.17
2000-01	9.51	22.78	31.21	25.00	11.50
2005-06	10.01	24.07	32.39	24.18	9.36

Source: <http://agcensus.nic.in/> cited on 06-09-08

Note: Marginal holdings are below 1 Hectare;
 Small holdings between 1 to 2 hectare;
 Semi Medium between 2 to 4 hectare;
 Medium are between 4 to 10 hectare and
 Large are above 10 hectare.

Table.5.3: Compound Growth rates of Area, Production and Productivity in Ananthapur district.

Crops	Years	1971-80	1981-90	1991-00	2001-09	1971-90	1991-09
		Sub-periods under pre - post reform				Pre-reform	Post-reform
Rice	Area	-3.2	-1.34	3.1	-4.34	-3.13	-1.88
	Production	-2.8	0.77	5.49	-1.53	-1.51	0.19
	Yield	0.4	2.14	2.32	2.94	1.66	2.11
Maize	Area	1.81	-2.03	21.64	19.41	0.52	17.19
	Production	2.49	-9.82	24.58	40	1.95	22.11
	Yield	0.67	-7.95	2.41	17.24	1.43	4.2
Pulses	Area	-4.31	-4.79	3.87	4.65	-3.75	6.05
	Production	-6.15	-4.09	4.37	11.46	-3.2	7.43
	Yield	-1.91	0.73	0.48	6.51	0.56	1.3
Cereals	Area	-3	-11.03	-2.35	-1.25	-6.68	-3.09
	Production	-2.4	-5.08	2.36	1.81	-2.83	0.08
	Yield	0.61	6.68	5.11	3.1	4.12	3.027
Food grains	Area	-3.27	-9.66	-0.36	1.74	-6.52	-0.23
	Production	-2.55	-5.02	2.72	3.97	-3.79	2.58
	Yield	0.29	5.77	4.29	3.71	3.6	3.02
Groundnut	Area	3.2	8.03	0.68	1.61	5.42	0.82
	Production	1.13	6.73	0.005	3.77	6.68	-4.06
	Yield	-2	-1.2	-0.67	2.12	1.2	-4.84
Oilseed	Area	2.7	7.8	-2.7	1.2	5.1	1.2
	Production	1	6.8	0.3	4.4	6.6	-3.5
	Yield	-1.6	-0.9	3.1	3.1	1.3	-4.7
Cotton	Area	-0.5	-13.4	-2.1	-20	-4.6	-9
	Production	7.8	-9.8	-5.2	-24.8	1.9	-13.3
	Yield	8.4	4.1	-3	-5.9	6.9	-4.6
chillies	Area	-3.8	1.2	3.2	-10.8	-2.1	-3.3
	Production	13.9	6	7.6	-3.3	-1	3.2
	Yield	18.5	4.7	4.2	8.4	1.1	6.8

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09, Published by Directorate of Economic and Statistics Organisation, Govt of Andhra Pradesh

Table No.5.4: Instability of Area, Production and Yield of selected crops in Ananthapur District.

Crops	Years	1971-80	1981-90	1991-00	2001-08
Rice	Area	23.23	32.32	28.72	37.65
	Yield	20.93	11.86	14.38	20.83
	Production	33.81	33.31	41.81	40.51
Groundnut	Area	12.24	12.77	9.75	23.06
	Yield	83.9	38.52	107.07	514.27
	Production	76.38	44.52	126.98	706.09
Cotton	Area	66.01	46.73	43.41	87.29
	Yield	70.27	66.26	20.14	36.22
	Production	113.15	104.58	36.48	43.38

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09,
Published by Directorate of Economic and Statistics Organisation, Govt
of Andhra Pradesh.

Table.5.5 : Occupational Distribution in Warangal

Years	Cultivators	Agricultural Labors	Total Workers
1991	413934 (32.42)	537236 (42.08)	1276640
2001	440478 (34.48)	389663 (30.50)	1277468

Source: Statistical Abstract- 2009, Directorate of Economic and
Statistical Organisation, Government of Andhra Pradesh.

Table.5.6 : Distributions of Number and Area of Operational Holdings according to Size in Warangal

Year	Share in Number of Holding				
	Marginal	Small	Semi-medium	Medium	Large
1970-71	47.01	19.89	16.62	12.23	4.25
1995-96	59.52	22.49	12.63	4.67	0.69
2000-01	63.4	20.66	10.92	4.25	0.77
2005-06	63.09	20.95	10.69	4.52	0.74
	Share in Operated Area				
1970-71	8.43	11.51	18.85	30.16	31.05
1995-96	21.55	24.18	25.85	20.38	8.04
2000-01	21.69	23.16	23.52	19.52	11.9
2005-06	21.1	23.66	23.29	20.74	10.2

Source: <http://agcensus.nic.in/> cited on 06-09-08

Note: Marginal holdings are below 1 Hectare;
 Small holdings between 1 to 2 hectare;
 Semi Medium between 2 to 4 hectare;
 Medium are between 4 to 10 hectare and
 Large are above 10 hectare.

Table.5.7 : Compound growth rates of Area, Production and Yield in Warangal District

Crops	Years	1971-80	1981-90	1991-00	2001-09	1971-90	1991-09
		Sub-periods under pre - post reform				Pre-reform	Post-reform
Rice	Area	3.3	3.3	5.3	4.2	2.90	2.72
	Production	6.2	6.9	7.2	6.9	5.24	4.56
	Yield	2.7	3.4	1.8	2.6	2.25	1.79
Maize	Area	2.83	-6.8	12.48	13.99	-2.12	12.07
	Production	2.58	1.35	3.71	5.41	0.59	4.19
	Yield	-0.24	8.75	-7.79	-7.52	2.78	-7.02
Cereals	Area	-0.3	-4.45	4.32	4.18	-1.65	2.64
	Production	4	1.95	7.79	8.53	1.51	6.11
	Yield	4.31	6.71	3.33	4.17	3.22	3.38
Pulses	Area	0.34	-5.06	-1.58	-2.9	-1.51	-1.64
	Production	4.51	-9.1	-4.16	0.99	0.58	0.16
	Yield	4.15	-4.25	-2.62	4.01	2.13	1.84
Food grains	Area	-0.5	0.3	0.5	1	-0.8	-0.1
	Yield	0.5	3.4	2.1	3.9	4.2	2
	Production	1.4	3.8	2.4	5.2	3	1.9
Groundnut	Area	-7.07	6.38	-6.86	-2.97	4.97	-5.91
	Production	-6.14	4.2	-4.86	3.98	4.24	-2.69
	Yield	0.99	-2.04	2.13	7.17	-0.7	3.42
Oilseed	Area	-4.1	5.6	-5.4	-3.7	4.7	-5.6
	Production	-6.1	4.4	-5.4	2.1	4	-3.3
	Yield	-2	-1.1	-0.03	6.5	-0.6	2.4
Cotton	Area	4.1	52.6	13.1	1.1	24.11	6.87
	Production	10	57.4	18.2	11.4	34.36	10
	Yield	5.6	3.1	4.4	10.1	8.26	2.92
Chillies	Area	-2.33	8.96	-0.93	-2.51	4.3	-1.9
	Production	6.15	11.54	5.47	4.84	8.7	2.3
	Yield	8.68	2.36	6.47	7.55	4.2	4.4

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09, Published by Directorate of Economic and Statistics Organisation, Govt of Andhra Pradesh

Table No.5.8 : Instability of Selected Crops in Warangal District.

Crops	Years	1971-80	1981-90	1991-00	2001-09
Rice	Area	59.29	19.11	62.93	29.31
	Yield	28.33	36.09	21.2	28.91
	Production	95.82	60.64	84.11	53.45
Chillies	Area	29.92	36.24	19.52	15.62
	Yield	66.45	41.22	34.55	17.81
	Production	95.35	78.23	53.23	31.21
Cotton	Area	74.72	106.39	19.41	17.75
	Yield	44.45	68.64	29.93	30.37
	Production	117.52	157.43	46.76	62.57

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09.
Published by Directorate of Economic and Statistics Organisation,
Govt of Andhra Pradesh.

Table.5.9 : Occupational Distribution in Guntur

Years	Cultivators	Agriculture labors	Total main Workers
1991	384353 (20.46)	967327 (51.48)	1878952
2001	389821 (19.84)	1073447 (44.57)	1869886

Source: Statistical Abstract- 2009, Directorate of Economic and Statistical
Organisation, Government of Andhra Pradesh.

Table.5.10 : The Distributions of Number and Area of Operational Holdings according to Size in Guntur

Years	Share in Number of Holding				
	Marginal	Small	Semi-medium	Medium	Large
1970-71	52.21	22.14	15.41	8.81	1.43
1995-96	67.71	19.16	10.03	2.99	0.11
2000-01	68.43	19.75	9.12	2.54	0.12
2005-06	69.45	19.42	8.64	2.38	0.11
	Share in Operated Area				
1970-71	14.56	18.17	24.85	30.08	12.33
1995-96	30.98	25.58	26.06	15.46	1.92
2000-01	31.84	27.67	24.59	13.94	2.16
2005-06	33.06	27.72	23.97	13.26	1.98

Source: <http://agcensus.nic.in/> cited on 06-09-08.

Note: Marginal holdings are below 1 Hectare;

Small holdings between 1 to 2 hectare;

Semi Medium between 2 to 4 hectare;

Medium are between 4 to 10 hectare and

Large are above 10 hectare.

Table No.5.11 : Compound Growth rates of Area, Output and Yield in Guntur district.

Crops	Years	1971-80	1981-90	1991-00	2001-08	1971-90	1991-08
		Sub-periods under pre - post reform				Pre-reform	Post - reform
Rice	Area	1.7	0.27	0.67	5.28	0.23	-0.8
	Production	2.4	2.32	2.32	5.13	4.2	0.05
	Yield	0.68	3.83	1.64	-0.14	3.9	0.8
Maize	area	2.59	22.1	5	29.1	5.7	11.8
	production	2.3	15.3	12	46.6	8.4	20.6
	yield	-0.27	-5.4	6.6	13.5	2.5	8.5
Cereals	Area	-0.77	-2.44	-0.02	5.45	-2.19	-0.38
	Production	2.01	2.78	2.35	9.29	2.73	1.83
	Yield	2.8	5.36	2.37	3.63	5.03	2.22
Pulses	Area	0.03	8.2	1.3	-4.28	3.56	0.15
	Production	-4.7	14.47	2.59	-0.16	5.78	2.25
	Yield	-4.74	5.78	1.27	4.29	2.13	2.1
Food grains	Area	-0.06	-4	2.9	2.8	-1.6	1.69
	Yield	3.2	3.4	3.2	4.1	3	3.45
	Production	3.4	0.32	6.5	7.2	1.45	5.7
Cotton	Area	18.27	9.7	-2.73	3.23	11.23	-2.4
	Production	29.76	1.44	-9.62	13.02	14.72	-0.008
	Yield	9.71	-7.52	-7.08	9.48	3.13	2.45
Chillies	Area	-12.7	8.1	10.2	1.5	-3.4	7
	Production	-8.8	15.6	13	8.7	5.9	12.2
	Yield	4.5	6.7	2.4	7.1	9.7	4.8
Groundnut	Area	-8.99	3.98	-18.62	2.89	0.45	-11.31
	Production	-8.46	5.81	-17.09	4.33	2.71	-7.7
	Yield	0.58	1.76	1.88	1.39	2.25	4.07
Oilseed	Area	-5.83	4.91	-7.98	4.42	-0.25	-4.24
	Production	-6.85	6.14	-13.58	17	2.38	-1.09
	Yield	-1.08	1.17	-6.08	12.05	2.64	3.28

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09, Published by Directorate of Economic and Statistics Organisation, Govt of Andhra Pradesh.

Table No:5.12 : Instability of Selected Crops in Guntur District.

Crops	Years	1971-80	1981-90	1991-00	2001-07
Rice	Area	15.68	12.72	6.8	32.95
	Yield	24.28	18.19	11	16.05
	Production	20.04	28.66	13.15	47.11
Cotton	Area	75.97	52.09	14.86	24.58
	Yield	107.4	52.54	59.85	40.38
	Production	244.98	36.82	38.18	72.8
Chillies	Area	24.33	40.35	34.16	23.16
	Yield	63.65	37.07	33.75	62.48
	Production	60.43	29.37	48.58	77.09

Source: Season and Crops Report of Andhra Pradesh, 1970-71 to 2008-09,
Published by Directorate of Economic and Statistics Organisation,
Govt. of Andhra Pradesh.

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CHAPTER -VI

PROBING THE SUICIDAL DEATHS: A MICRO ANALYSIS

6.1: Introduction:

In this chapter unearths the factors underlying farmer's suicides in Andhra Pradesh with reference to the three selected districts from three regions of Andhra Pradesh as follows: Guntur of Coastal Region, Warangal of Telangana Region and Ananthapur of Rayalaseema Region respectively. This chapter contains two parts. The first part presents the comparative analysis of inter-district and intra-district causes for farmers' suicides in three regions of Andhra Pradesh. To achieve the intended specific objectives and purpose, necessary primary data was obtained from 129 selected families where suicides occurred during 2007 to 2009 from 112 villages of the three regions of Andhra Pradesh. Most of the data was gathered through personal interviews with the help of a well-structured schedule. The data collected from the respondents includes general information about suicide farmers, their resource position, land holding, cropping pattern, debt condition, asset position, sources of credit, purpose of credit, mental status of person, addictions if any, reasons for suicide and any other information family wishes to share. The second part draws comparison of farmers' suicides with non-suicides in Andhra Pradesh. We identified if at all there were to exist some non-suicides households that are similar to the suicides families in the village in term of landholdings and other assets. This particular information was obtained from the village Sarpanch, Village Revenue Officers and elders of the village. For an objective analysis, we also used data collected from 87 non-suicide families from 87 villages. A statistical exercise was carried out to compare suicides and Non-Suicides households. Households suicide status is a binary dependent variable, Y; 1=Suicides and 0=Non-suicides. The independent variables, size of the landholding (SL), Family size (FS), Total indebtedness (TI), Total expenditure (TE), per hectore expenditure (PHE), Value of livestock in rupees (LSV).

6.2: Basic Particulars of the Deceased Individual:

The analysis is based on information collected from 129 suicide (case) families from the three selected districts. These suicides occurred during 2007 to

2009. The highest numbers of cases, 60, were in Ananthapur District of Rayalaseema accounting for 46.5 per cent of the cases, 38 (29.4 per cent) in Warangal district of Telangana and 31 (24 per cent) in Guntur of Andhra Region. However, before comparing we analysed some information regarding the deceased individual and the circumstances leading to his/her suicide. This information was collected from the suicide-case households only. Some basic particulars of deceased members are given in Table.6.1 (for district wise distribution see Table 6.1). From the 129 suicide cases under analysis, 97.6 per cent are males, 2.3 per cent are female farmers who committed suicides. Districts wise age distribution of suicides families, in the case of Warangal, out of the total suicides cases in Warangal, male farmers constitute about 97.3 per cent and female farmers 2.3 percent of total suicides cases in this districts. In Guntur, male suicides constitute about 100 percent out of the total sample. In the case of Ananthapur, 97.6 percent are male farmers who committed suicides and 2.3 percent are female. Regarding their Age status, the majority of victims, 38.7 per cent belonged to the age group of 31 to 40 and another 27.9 percent belonged to the age group of 41 to 50 and 21.7 per cent belonged to the age group of 21 to 30 years. Relatively the victims Age 51 and above constituted about 11.6 percent of the total suicides.

In the Distribution of the sample, households in Warangal districts, out of 38 total samples, of which 42.1 per cent of the suicides occurred from age group of 41 to 50 only and only 34.2 per cent belonged to age group of 31 to 40. Age group between 21 to 30 years constitute 15.7 per cent of selected sample from three districts. The age group of 51 and above makes up nearly 7.8 per cent of the total suicides. In Guntur, most of these farmers were young people who were in their mid thirties and forties. Out of the total 31 cases, of which 16.1 per cent of them were between the age group of 21 to 30 years and 45.2 per cent of they were between 31 to 40 years. 19.4 per cent of them were between age group of 41 to 50 years. There were 19.4 per cent suicides cases under the age group between 51 and above. In terms of their educational background, 70.5 per cent of the cases belonged to illiterate, 3.8 per cent primary level, 11.6 per cent upper primary level, 12.4 per cent schooling and matriculation and the rest of 1.5 out of the total selected suicides samples studied more than matriculation. In terms of district

wise distribution, in Warangal district, 78.9 per cent suicides occurred among the illiterates, followed by 10.5 percent from secondary or matriculation background and 5.2 percent from primary education background. Interestingly no suicide cases were registered from people with higher education. The Guntur district farmers' suicides educational background reveals that majority of them are illiterates. It amounts to 83.8 per cent. Out of the remaining 3.2 per cent are with primary, 9.6 per cent secondary and 3.2 per cent higher educational backgrounds. Whereas, Ananthapur district presents slightly different picture, the illiterate percent is only 58.3. Nearly 24.9 percent completed primary education. Roughly, 15 percent had secondary education.

The above inter district analysis discloses the following interesting insights. In Guntur district, the rate of involvement of females' in agriculture is very less. Poverty is one of the reasons why females have directly involved in Ananthapur and Warangal districts. Moreover, 2/3 of the farmers who committed suicides are from the age group of 30 to 50. In all the three districts, majority of farmers who committed suicides are married. Most of them happen to be illiterates and many are new to agriculture with less than five years of experience. Among the three selected districts if one were to look for the statistics based on experience, Ananthapur stands out with high number of inexperienced farmers who committed suicides followed by Guntur and Warangal respectively.

6.3: Operational Landholdings¹:

Operational land holding refers to the area available with the farmers for cultivation at the time of suicides. It includes *own land, leased-in and leased-out*, land. Table 6.2 gives the profile of the distribution of land holding of suicides farmers households among the different size groups from selected three districts.

Table 6.2 gives the profile of the distribution of land holding of selected sample households among the different size groups from selected three districts. Among the selected landholders, large farmers are not found in Guntur and Warangal. While the small farmers are considerable in all the three selected districts, in Ananthapur alone we find large proportion of semi-medium farmers (31) and comparatively very less in Warangal and Guntur. Average size of

marginal holding in Ananthapur district is highest due to the dry land owned by them compared to combination of dry and wet land owned by marginal farmers in Guntur and Warangal districts. The distinct feature of Warangal district is the absence of medium and large farmers in the selected sample households.

As depicted in Table 6.3 that the Cumulative frequency of landholding of the suicides families from selected districts and subsequent calculated gini coefficients of the suicide case households survey indicate that the inequality among the three districts is the highest and outstanding in Guntur (0.39), then follows Ananthapur (0.25) and Warangal(0.20).

Table 6.4 explains the land ownership holding in different sizes. It is found that there are three types of land ownerships. They are -1. pure owner, 2. Pure tenant 3. Owner cum tenant. In Warangal District, pure owner landholding, in case of marginal, small, and semi-medium farmers is found to be 12.8 per cent, 28.5 per cent and 8 per cent and they hold 26.3 percent, 28.9 per cent and 5.2 per cent respectively of the total operated area. On the other hand, pure tenant, landholding is calculated to be 2.6 per cent and 2.6 per cent. They control 2.1 per cent, 4.2 per cent of the total operated area, while the owner cum tenant, landholding is 5.2 per cent, 13.1 per cent and 15.6 per cent in the case of marginal, small, semi-medium farmers. They manage 3.5 percent, 13.1 per cent and 25.9 per cent of total operated area. In Guntur, 12.9 per cent of pure owner landholding marginal farmers are directly in command of only 3.2 per cent of the total operated area. The pure tenant landholding is calculated as 9.6 per cent. 9.6 per cent of marginal and small farmers control 4.2 per cent and 7.1 per cent of total operated area respectively. On the other hand, owner cum tenant land holding, in the case of marginal, small, semi-medium and medium farmers is 3.2 per cent, 38.7 per cent and 16.1 per cent and 9.6 per cent. They manage only 1.7 per cent, 30.9 per cent, 21.4 per cent, and 31.2 per cent of total operated area respectively. In case of Ananthapur, out of the total land holding, pure owner landholding is calculated to be 11.6 per cent, 21.6 per cent, 40 per cent and 8.5 per cent, 1.6 per cent among the marginal, small, semi-medium, medium and large farmers. They have hold on 3.9 per cent, 13.5 per cent, 42.3 per cent, 16.1 per cent and 6.7 per cent of the total operated area in the district. On other hand, owner cum tenant, landholding is calculated as 5 per cent, 83 per cent and 1.6 per cent among

marginal semi- medium and medium farmers. They operate in 2.4 per cent, 9.3 per cent and 3.6 per cent of the total operated area, respectively. In the case of pure tenant, landholding is calculated as 1.6 per cent of semi-medium farmers. They control 1.8 per cent of the total operated area, respectively.

It is significant to note that pure tenant marginal and small farmers are not found in Ananthapur district due to uncertainty in the agriculture operation and income from dry land. Pure tenant farmers are confined to semi-medium operators in Ananthapur district due to migration of landowner to the urban areas. Owners themselves largely in the district cultivate different sizes of landholding. While in Guntur district, different sizes of landholding are cultivated by owner cum tenant. The peculiar feature of Guntur is cultivation of small, semi-medium and medium and large landholdings are not in the hands of the owners. The pure owner cultivation suicides are few. Only four suicides are noted and all are marginal farmers. In Warangal district, marginal, small, semi-medium landholdings are cultivated by owner themselves.

Table 6.5a, 5b, 5c shows that distribution of tenant according to terms of tenancy from selected districts is presented. In Warangal, from the suicides households 15 households comprising pure tenants and owner cum tenant have entered into the tenancy market. The research studies reveal that majority of households into tenancy are from owner cum tenant and small and semi-medium background. Presently we come across two types of tenancy- (1) fixed rent system without any advance capital, (2) fixed rent system with advance capital. In the case of pure tenant, 100 per cent small farmers associated with 50:50 fixed rent system with advance capital and 100 per cent semi-medium farmers associated with fixed rent system without any advance. In the case of owner cum tenant, 60 per cent of small farmers associate with 75:25 fixed rent system with advance capital and 40 per cent associate with fixed rent system without any advance capital. On the other hand, 33 per cent of semi-medium farmers associate with 75:25 fixed rent system with advance capital and 66 per cent associate with fixed rent system without any advance capital.

In Guntur, in the case of pure tenant, 33 per cent marginal farmers have entered into 75:25 fixed rent system with advance capital and 66 per cent with

fixed rent system without any advance capital, whereas 100 per cent small farmers have fixed rent system with advance capital. In the case of owner cum tenant, 75 per cent of small farmers come under 75:25 with fixed rent system with advance capital and 25 per cent of them with without any advance capital. On the other hand, 80 per cent of semi-medium farmers are associated with 75:25 with fixed rent system with advance capital and 20 per cent of them with without any advance capital. 66 per cent of medium farmers associate with 75:25 with fixed rent system with advance capital and 33 per cent of them associate with without any advance capital. In the case of Ananthapur district, all most all categories of farm households associate with fixed rent system without any advance capital.

One can conclude that 75:25 tenancy contracts with fixed rent system are most unfavourable to the farmers. It is very vivid and clear in Guntur and Warangal Districts. It is very interesting to observe from the above stated facts that most of the pure tenant and owner cum tenant households in Guntur and Warangal districts are connected with this type of tennorial arrangement, which is more exploitative. Perhaps such tenancy contract is also an added reason for the farmers' suicides.

Table 6.6 depicts caste wise distribution of farmers' suicides households. The sample households are divided into SC (Schedule caste), ST (Schedule Tribes), BC (Backward caste) and OC (Other caste). In Warangal district, the distribution of households by caste wise shows that out of 38 total samples, of which 63.1 percentage suicides families belonged to BC (Backward caste), Sc and ST, comprised 21 per cent and other caste shared the rest of 15.7 per cent. B Operational holding size distribution points to the fact that the majority of suicides farmers were BCs (Backward caste). Out them, 26 percent fall in the marginal farmers' category, 18.4 per cent in the small farmers' category and 18.4percent in the semi-medium category. The SC farmers' statistics are as follows- 5.2 percent marginal farmers, 5.2 per cent the small farmers who committed suicides, whereas 7.8 per cent of STs were small farmers and 2.6 per cent semi-medium farmers. On the other hand, 15.7 per cent of other caste farmers who committed suicides come from small farmers' background. In Guntur, out of the 31 farmers' suicides, 54.8 per cent belonged to BC (Backward caste), 29 percent to OC (Other Caste) and

14.1 percent to SC & ST of total sample. Category wise distribution of operational holding is, 16.1 per cent marginal farmers, 32.3 per cent small farmers and 6.4 percent semi-medium farmers who committed suicides belong to backward caste (BC). Among the schedule caste (SC), 6.4 per cent are marginal and 6.4 percent small farmers among those who committed suicides. In the case of STs 3.2 percent are small farmers who committed suicides. Among OCs, 3.2 percent belong to marginal farmers, 6.4 percent to small farmers, 9.6 per cent to semi-medium and 9.6 to medium farmers'. In the case of Ananthapur, out of the 60 farmers' suicides, BC (Backward caste) amounts to 56.3 per cent followed by OC 35 per cent and SC and ST 11.6 per cent of the total sample. Distributed by size of operational holding, majority of the BC (Backward Caste) 6.6 per cent, belong to marginal, 15 per cent belong to small, and 23.3 per cent fall in the semi-medium farmers. While other caste, 3.3 per cent fall in the small farmers, 6.6 per cent fall in the marginal farmers, 23.3 per cent fall in the semi-medium farmers and one per cent belongs to large farmers. Among SCs, 1.6 per cent is the small and 1.6 per cent is semi-medium farmers. In the case of STs 3.3 per cent are marginal and semi-medium farmers who committed suicides out of the 60 suicides farmers households.

From the above analysis it is obvious that vast majority of farmers' suicides have occurred among OBCs. The same trend exists in all the three selected districts. OBC farm households with limited assistance and income seem to have ventured to borrow heavily to meet the higher cost of cultivation that resulted in accumulated debt burden hence large number of suicides. On the other hand, most of the SCs and STs are agriculture labourers. They have low incomes and small portions of land. These farm households with limited assistance and low income have dared to borrow heavily to meet the higher cost of cultivation from moneylenders that resulted in torture and threat to life from moneylenders. For instance, one of the SC farmers having 7 acres of dry land has two sons. The first son got married recently and second son is an auto driver. The head of house met with an accident. He could no more work in the field. Therefore, his first son took care of the entire field. For the groundnut cultivation, he borrowed Rs.50000 from institutional sources by mortgaging a part of the land. As if it were not enough to meet other family/social obligations on loan, he received Rs.2.5 lakhs rupees from

non-banking financing institution (chit fund), micro finance institutions and village moneylenders at an exorbitant interest.

After the harvesting of groundnuts, the trader came and took away the entire agricultural output and he did not give any money to the farmer in the name recovering loaned money. Other moneylenders, friends and micro finance institutional forced him to return money. It was too much for the farmer to digest the fact. Under these circumstances, the first son got frustrated. He thought that ending life is the only solution to escape torture hence committed suicide. The second son having realized that the trader cheated his brother, decided to claim for money and demand for justice. He courageously confronted the trader and asked for remaining balance from trader. One night the trader hired the second son's auto services in the night about eight o' clock. As the auto was reaching a secluded place, with the help of another trader cut off the head and threw it in the jungle. Separated torso was buried in the nearby place. It took several days to know the death news. Most of the suicides are under fear and pressure happened.

6.4: Irrigated Area:

The pattern of distributions of area under irrigation and non-irrigation from selected farmers' suicides households is presented in the table number 6.6. Table 6.7 explains the distribution of area under irrigation among size of holding. In Warangal, we find only 6.4 per cent of irrigated area out of total operated area and 93.5 per cent under non-irrigated out of the 137.9 acres of operated area. About size of the landholding distribution shows that 10.2 per cent of operated area is under irrigated and 89.7 per cent of the operated area is under non-irrigated. Only 6.1 per cent of the small farmers are under irrigation out of total operated area and 93.7 per cent is under non-irrigation. Among semi-medium farmers, 4.7 per cent out of the total operated area is under irrigation and 95.2 percent of the area is under non-irrigation. In Guntur, the total operated area is 149.5 acres, of which 88.6 per cent comes under irrigation and 11.37 percent is under non-irrigation. Size-group wise distribution shows that 88.6 per cent of total operated area by marginal farmers is irrigated and 13 per cent is under non-irrigation, while the small farmers' landholding area under irrigation is 96.2 per cent and non-irrigated is 3 per cent. On other hand, semi-medium farmers irrigate

83.7 per cent out of total operated area and 16.2 per cent is under non-irrigation. Medium farmers irrigate 83.3 per cent of total operated area. Only 16.6 per cent is under non-irrigation. In Ananthapur, the total operated area is 341.63 acres, of which 0.5 per cent is found under irrigated and 99.5 per cent is under non-irrigated area. Size group wise distribution shows that 0.5 per cent of the area operated by semi-medium farmers is irrigated, while the marginal and small, medium and large farmers did not have any land under irrigation.

From the above data and observation, we find that only in case of categories of farmers' suicides households in all selected districts. In Guntur 88.6 per cent of area operated by different categories of suicides farm households is under irrigation in contrary to this area only 6.4 per cent is under irrigation in Warangal district. In Ananthapur district, the area under irrigation is 0.29 percent, which is insignificant in appearance and nature. The landholding in Guntur district area is under irrigation while that of Ananthapur and Warangal districts are under rain-fed category.

6.5: Cropping Pattern⁵:

Cropping pattern across three districts is more diversified. The proportion of cropped area under non-food crops in the gross cropped area was highest in Ananthapur, Guntur, and Warangal in decreasing order. However, the incidence of suicides does not follow the same order. This indicates that the proportion of area under non-food crops is not correlated with the incidence of suicides. In order to understand the cropping pattern form of different districts and regions, crops can be classified into three types 1.Canal irrigated Crops 2.Bore well irrigated Crops, 3.Rain-fed Crops. The cropping pattern in the 6.8 table reveals that cotton crop continues to be the dominant crop in Guntur and Warangal, and groundnut in Ananthapur district. We also find in 6.8 table the cropping pattern practiced by suicides families in selected districts. In Warangal District, the proposition of area under non-food crops is very high. However, as the dependence of ground water increased, incidence of suicides also increased. Out of 149.5 acres of total operated area, 69.1 per cent of cotton was cultivated under bore well irrigation, 13.1 per cent under rain-fed irrigation and 2.9 per cent under canal irrigation. Apart from this, 1.4 per cent area under bore well irrigation was allotted to

chillies, 11.3 per cent area to paddy and 2 per cent area under canal irrigation to paddy. In Guntur district, out of 137.14 acres of total cropped area, 42.8 per cent area was set aside for cotton under Canal irrigation, 5.2 percent under bore well irrigation and 4 percent under rain-fed irrigation. 32.6 per cent area was left for chillies under canal irrigation, 5.3 per cent area under bore well irrigation. Apart from these, 8 per cent of area was for paddy under Canal irrigation.

In Ananthapur district, where groundnut was only non-food crop, its proposition to total area was very high. However, the incidence of suicides was compounded to high dependence on ground water. (See the above table 6.7) 89.5 per cent of area was assigned to groundnut under Rain-fed irrigation and 6.5 per cent under bore well irrigation out of the total operated area. Apart from this, 0.5 per cent of area was for paddy under bore well irrigation and 1.5 per cent area for sweet orange out of the total area operated in this district.

From the above analysis we conclude that cotton cultivation under canal is only limited to Guntur district while the cotton cultivation under well is widespread in Warangal district. Chillies cultivation under canal is found only in Guntur district and a small proportion of land in Warangal district is under well irrigation. Similarly, 1/10 of the land owned by the selected farm households in Guntur district irrigate paddy crop under canal and equal area owned by selected farm households in Warangal district irrigate paddy under wells. Cultivation of cotton, chillies and paddy crops seem to have disappeared in Ananthapur district. On the other hand, groundnut emerged as the principal crop in the district, of which 6.5 per cent is irrigated under well and nearly 90 per cent depends on rains. The gradual increase of groundnut cultivation in Ananthapur district decreasing the quality and quantity of the raising of crops like Raagi, Pulses and Sunflower. We see detectable change in the cropping pattern of the district. In other words in Ananthapur district heading towards mono-crop (groundnut) at the cost of rewarding multi-crop, which is suitable to the weather pattern of the district. To have suitable land for groundnut cultivation deliberately farmers have spread sand carted from the nearby rivulets. Such an inadvertent move has resulted in sandy soil, which can no more suit other crops in case one intends to give up groundnuts. Desertification too is becoming a recurring phenomenon. Since sand is mined from the rivulets, recharging of the ground water table has come to stand still

resulting in continuous droughts. Other important change in the cropping pattern of Ananthapur district is deliberate discontinuance of cash crop sericulture. Also good many turn to horticulture crops like sweet orange, because subsidies offered by government for raising sweet orange crop are so attractive and enticing. As days went by recurring droughts worsened the economic condition of sweet orange growers, they too have experienced economic slowdown and debts, which frustrated them to commit suicides. Therefore, in Ananthapur district we come across suicides among commercial crops growers as well as horticulture growers.

Table 6.9 presents distribution of income range among suicide farmers' households. In Warangal district, out of the 38 total sample households 71 per cent of the farmers suicides households have less than 15001 to 20000 income, while 21 per cent of the farmers suicides households have less than 20001 to 25000 income and only 7.6 per cent of farmers suicides households have less than 25001 to 30000 income. Income range category wise holding, 23.6 per cent of marginal households, 34.2 per cent small households, 13.1 per cent semi-medium farmers come under Rs.15001 to 20000 range of income. 7.8 per cent suicides marginal farmers and 13.1 percent small farmers fall in the income group of Rs.20000 to 25000. Only 7.8 per cent of the semi-medium farmers' households belong to Rs. 25000 to 30000 income group. In Guntur district, out of the 31 total samples, of which 61.2 per cent of farmers households belong to the income group of Rs.15001 to 20000 while the 25.8 per cent belong to the income group of Rs.20001 to 25000. And 6.4 per cent belong to the Rs.10001 to 15000, 3.2 per cent of belong to the income group of less than 10000 and 3.2 per cent farmers suicides households belong to the income group of Rs.25001 to 30000. According to the size of landholding, 12.8 percent, 38.7 per cent, 6.4 per cent and 3.2 per cent of the marginal, small, medium and semi-medium farmers belong to Rs.15001 to 20000 range of income. Within the range of Rs. 20001 to 25000 income group 3.2 percent, 9.6 per cent, 9.6 per cent and 3.2 per cent of the suicides farmers belong to marginal, small, semi-medium group. On the other hand, only 3.2 per cent of the medium farmers belong to the income group of Rs. 25001 to 30000, while the 3.2 per cent of marginal farmers belong to the income group of Rs. less than 10000. In Ananthapur District, out of the 60 total samples from this district, of which 21.6 per cent of suicides farmers belong to the income

group of Rs.10001 to 15000, while the 28.3 per cent suicides farmers belong to the income group of Rs. 15001 to 20000. On the other hand, only 28.3 percent of the suicides farmers belong to the income group of Rs. 125001 to 30000 while the 6.6 per cent of suicides farmers belong to the income group of Rs30000 to 35000 and only 1.6 per cent of the suicides farmers belong to the income group of Rs.40000 and above. With regard to the size of landholding, which is calculated as 6.6 per cent, 6.6 per cent and 5.3 per cent of marginal, small and semi-medium suicides farmers find place within the income group of Rs.10001 to 15000. While the 5 per cent, 10 per cent, 11.6 per cent and 1.6 per cent of the income earned by marginal, small, semi-medium, medium suicides farmers' households belong to the income group of 15001 to 20000. On the other hand, 6.6 per cent 0.20 per cent and 1.6 per cent of the income earned by small, semi-medium, medium suicides farmers belong to the income group of 20001 to 25000 while the 5.3 per cent and 5 per cent of the semi-medium, medium suicides farmers' households belong to the income group of 25001 to 30000. Among the income group of Rs30001 to 35000, only 1.6 per cent, 3.3 per cent and 1.6 per cent of small, semi-medium and medium suicides farmers earn place. Only 1.6 per cent of the incomes earned by large suicides farmers' households belong to the income group of the Rs 40000 above.

The above tabular analysis reveals that most of the suicides farmers' households are from small farmers with Rs 15000 to 20000 annual income earnings. It is very true in the case of Ananthapur and Warangal districts. In Guntur district, small and semi-medium farmers committed suicides with Rs. 20000 to 25000 annual income earnings. If one were to total up the whole suicides percentage, it amounts to 71 per cent. This amount consists of only small and semi-medium farmers groups. This trend is very prevalent in all the districts.

6.6: Credit Details:

Formal institutions⁶ like Commercial Banks, Primary Agricultural Credit Co-operative Societies and Grameena Banks are important sources of credit in the study area. Non-institutional⁷ private sources includes input dealers (seeds, fertilizers and pesticide shop dealers), commission agents who operate at market yards, rich farmers, micro financiers, friends and relatives. The relative importance

of different sources of credit reveals that it is the non-institutional private credit, which is the main source of credit for most of the small and marginal farmers in the study area. Among private sources, the credit from input dealers who sell inputs mainly pesticides on credit is crucial in catering to the much of the credit needs of these farmers. All the 129 deceased farmers were having large proportion of private debts mostly borrowed from input dealers.

6.7: AVERAGE INDEBTEDNESS:

Distribution of suicides borrower farmers among different size of groups is presented in table 6.10. The per farm magnitude of debt among different categories of farmers is also presented in Table 6.9. In Andhra Pradesh, the average amount of debt per suicides farmers sample household at the end of March 2011 was Rs. 2, 03,363. The average amount of debt per sample farm household was highest (Rs 240301) in Guntur district of Andhra region, followed by Ananthapur district of Rayalaseema region (Rs 212524) and Warangal district of Telangana region (Rs 1,58,764). The average amount of debt on per hectare basis was Rs 99,580. Since the average farm size in Guntur district of Andhra region is the largest, the per hectare amount of debt was also highest. It was Rs 123949 in Guntur district of Andhra region, followed by Warangal district of Telangana region (Rs 1, 10,204) and Ananthapur district of Rayalaseema region (Rs 85,810) per suicides sample household. Such alarming statistics were mainly due to the cotton crop failure from 2007 to 2009 in Andhra and Telangana regions and groundnut failure in Rayalaseema region. The amount of debt per suicides sample household was directly related to farm size. It was the highest in the case of marginal and small farms and lowest in the case of semi-medium farms. However, in relation to land (per ha), the association was negative. The relative indebtedness of the marginal farmers, i.e. on per ha basis was two times than that for larger farmers for Andhra Pradesh as a whole. It was Rs 159500 and Rs 83048 per ha per sample household for marginal and medium suicides farmers respectively.

In the Ananthapur district of Rayalaseema region, marginal farmers were almost three times more indebted on per ha basis than the large farmers in the following range of Rs 2,18,771 and Rs 59,290 per ha per marginal and large farmers respectively. It was even higher in the Guntur district of Andhra region

where indebtedness was double for marginal farmers (Rs 1, 53,544 per ha) than large farmers.

In the table 6.11, we have the average distributions of outstanding loans by category wise for suicides farmers' households across different sources in selected districts. It indicates the borrowed amount, which is unpaid up to the date of survey. In Warangal District, out of the total loans, of which 11.3 per cent loans received from institutional sources and 88.6 per cent of the total loans received from non-institutional sources. With regards to category wise loans obtained, it is noticed that loans received by the marginal farmers is 6.4 per cent from institutional sources and 93.5 per cent from non-institutional sources, while the small farmers' received 9 per cent loans from institutional sources and 90.9 per cent from non-institutional sources. On other hand, semi-medium suicides farmers' received 14.7 per cent loans from institutional sources and 85.2 loans received from non- institutional sources. In Guntur district, out of the total loans received, 6.7 per cent loans were from institutional sources and 93.2 per cent from non-institutional sources. Regarding distribution of size of landholding of marginal, small, semi-medium and medium farmers is 5.2 per cent, 5.4 per cent and 10.5 per cent and 5.8 percent of the loans received from institutional sources respectively, while the loans received from non-institutional sources is 94.7 per cent, 94.5 per cent, 89.4 per cent and 94.4 per cent respectively. In the case of Ananthapur, out of the total loans, of which 26.9 per cent of the total loans received from institutional sources and 73 percent loans received from non-institutional sources. According to the size of landholdings, in the case of marginal, small, semi-medium, medium and large farmers the received loans worked out to be 9.1 per cent, 15.8 per cent, 21.6 per cent, 11.5 per cent and 35.6 per cent respectively from institutional sources and 90.8 per cent, 84.1 per cent, 78.3 per cent, 88.4 per cent and 64.3 per cent from non-institutional sources.

The above three inter-districts analysis shows that the large majority of suicides farmers had borrowed heavily from non-institutional sources at high rates of interest. On other hand only 10 to 15 per cent of the loans raised by suicides, farmers were from institutional sources. The amount of loans received by the small farmers and semi-medium farmers from the institutional sources is around Rs.11, 000 and 28,000 respectively. This clearly indicates that the loans provided

by institutional sources are highly inadequate to meet the increasing cost of cultivation that forced the farmers to borrow heavily from non-institutional sources at higher rates of interest. That ultimately resulted in panic in the families leading to suicides. In the case of Ananthapur, the loans provided by institutional sources to the marginal and small farmers' categories is more than twice that of the amount provided to the same in Warangal and Guntur districts. Another important feature of Ananthapur is that the marginal farmers borrowed 10 times more loans from non-institutional sources than from the institutional sources. According to Village Revenue Officer (V.R.O) and other locals in the village, a big farmer owned 25.20 acres in Ananthapur. He borrowed 4 lakhs of rupees from institutional sources by mortgaging a part of his land and to meet the cost of cultivation and other family/social obligations received another 6 lakhs of loan from non-banking financing institution (chit found), micro finance institutions and village moneylenders at exorbitant interest. Unfortunate failure of crops created panic in his family and forced him to commit suicide and thus leaving other members of his family in distress and debts. Such trauma had socio-psychological tension and resulted in exclusion from all kinds of opportunities and resources. As if, it were not enough the suicides farmers' families underwent unwritten practiced social exclusion and boycott in day to day to life.

6.8: Sources of Credit:

In Warangal district, distribution of average borrowed amount in different institutions and Non-institutions among different size of groups is presented table 6.12a, 6.12b, and 6.12c. Among institutional sources 34.5 per cent from commercial banks, 19.6 per cent from cooperatives, and 45.8 per cent from rural banks. All the farm size categories were almost equally served. Amongst non-institutional sources, the moneylenders were the major source of credit, and provided about 20.3 per cent of total farm credit, which almost amounts to 82.2 per cent of the total credit from non-institutional sources. If one were to look at from farm size category, marginal farmers obtained 14.1 per cent of loans from institutional sources and 85.8 per cent from non-institutional sources. The small farmers whereas acquired 16.6 per cent of their loans from institutional sources and 83.2 per cent from non-institutional sources. On other hand, semi-medium

farmers claimed 21.5 per cent of their loans from institutional and 78.4 per cent from non-institutional sources.

In Guntur district, distribution of average borrowed amount in different institutions and non-institutions among different size of groups points to the following interesting discovery. Amongst institutional sources, commercial banks provided 39.8 per cent, cooperatives about 48.2 per cent and rural banks about 11.9 per cent of loans. Here too all most all the farm size categories were equally served. Amongst non-institutional sources, the moneylenders and landlords were the major sources of credit. They supplied about 46.5 per cent of total farm credit, which is around 86.4 percent of the total credit from non-institutional sources.

Farm size category statistics reveal that the marginal farmers procured 9.6 percent of their loans from institutional sources and 90.3 per cent from the non-institutional sources, while the small farmers obtained 19.9 per cent of their loans from institutional sources and 89 percent from non-institutional sources. The total per cent of loans received by the semi-medium farmers from institutional sources was 16.7 and from non-institutional sources were 83.2 per cent. The medium farmers whereas accounted 14 per cent of their loans from institutional sources and 84.9 per cent from non-institutional sources.

In Ananthapur district, Distribution of average borrowed amount in different institutions and non-institutions among different size of groups divulge interesting findings. Amongst institutional sources, commercial bank provided 77.2 per cent of the loans, cooperatives about 9.2 per cent and rural banks about 11.3 per cent. Here too we notice that the all the farm size categories were equally served. Amongst the non-institutional sources, landlords were the major source of credit, and provided about 46.5 per cent of total farm credit, which amounted to 86.4 per cent of the total credit from non-institutional sources.

In the farm size category, marginal farmers obtained 16.1 per cent of their loans from institutional sources and 83.8 per cent from non-institutional sources. The small farmers obtained 33.6 per cent of their loans from institutional sources and 66.3 per cent from non- institutional sources. In the case of semi-medium farmers, 29.3 per cent of loans were from institutional sources and 70.6 per cent from non-institutional sources. The medium farmers whereas accounted for 29.8

per cent of loans from institutional sources and 70.1 from non- institutional sources.

Among the three selected districts, it is noticed that intermediaries or middlemen (traders) are the principal sources of loan facilitators in the selected farm households followed by landlords. The suicides farmers owed further large amount of debt to either the moneylenders or micro finance institutions. This clearly indicates that farm households have been borrowing heavily from the unorganised sources who happened to be major exploitative forces. When we turn to the banking institutions, most of the farm households have huge debts in commercial banks and regional rural banks. It is also observed that there are instances of one households borrowing from different sources and more than once from the same sources. It is also inferred that on an average, each farm household borrowed more than 5 to 6 times from some of the sources. In all the three districts, moneylenders have emerged as principal sources and SHG the minor sources of loan providers. Ananthapur district stands out distinctly by receiving large amounts of loans from regional rural banks. Guntur and Warangal districts whereas heavily borrowed loans from commercial banks. Thus, one can conclude that many farm households have huge debts with private moneylenders and non-institutions in all three selected districts.

6.9: Rate of Interest and Size Groups:

Table 6.13a, 13b and 13c, clearly present distribution of average borrowed amount according to rate of interest among different size groups.

In Warangal district, amount borrowed at the rate of 35 per cent to 44 per cent by marginal, small and semi-medium farmers are found to be 39.9 per cent, 36.3 and 18.2 per cent of the total loan respectively. In the case of marginal, small and semi-medium farmers, the amount borrowed at the rate of 13 to 24 per cent is calculated to be 43.1 per cent, 48.1 per cent and 71.3 per cent of the total loan respectively. The marginal, small and semi-medium farmers borrowed loans 16.9 per cent, 14.8 per cent and 10.3 per cent of total amount at the rate of 9 to 12 per cent.

In Guntur district, a considerable amount of borrowed loan of the marginal, small and semi-medium, medium farmers discovered to be exorbitant rate of interest (45 to 55 per cent), which is worked out as 24.8 per cent, 28.5 per cent, 16.6 per cent and 20.3 per cent of the total loan respectively. The amount borrowed at the rate of 25 per cent to 35 per cent in the case of marginal, small, semi-medium, and medium farmers stands at 41 per cent, 40.6 per cent 39.2 percent and 54.8 per cent of the total loan respectively. In the case of marginal, small, semi-medium, and medium farmers, the amount borrowed at the rate of 13 to 24 per cent is calculated as 22.3 per cent, 19.4 per cent, 30.8 per cent and 15.2 per cent of the total loan respectively. The amount borrowed at the rate of 9 to 12 per cent by the marginal, small, semi-medium and medium farmers' comes closer to 12.6 per cent, 11.3 per cent, 13.1 per cent and 9.6 per cent of the total loan respectively.

In Ananthapur district, semi-medium, medium and large farmers borrowed 19.1 per cent, 17.8 per cent and 13.8 per cent of total loans at the rate of 35 to 44 per cent respectively. The amount borrowed at the rate of 25 to 34 per cent by the marginal, small, semi-medium, medium and large farmers' amounts to 81.1 per cent, 54.4 per cent, 46.2 per cent, 44.5 per cent and 26.3 per cent of total loans respectively. In the case marginal, small, semi-medium, medium and large farmers' the amount borrowed at 13 to 24 per cent stands at 10.9 per cent, 21 per cent, 14.5 per cent, 18.4 per cent and 5.9 per cent of total loans respectively. The amount borrowed at the rate of 9 to 12 per cent by the marginal, small and semi-medium, medium and large farmers' is 7.9 per cent, 24.5 per cent, 19.1 per cent, 19.2 per cent and 53.8 per cent of total loans respectively.

6.10: Rate of Interest and Sources of Credit:

Table 6.14a, 14b and 14c display the distribution of average borrowed amount according to rate of interest among different institutions and non-institutions. In Warangal District, 61.7 per cent of institutional agencies and 38.2 per cent of non-institutional agencies charged 9 to 12 per cent of rate of interest of the total loan. The actual breakup of institutional sources percentage is 37.8 per cent commercial bank, 38.9 per cent rural bank and 23.2 per cent cooperative bank respectively. The non-institutional agencies' percentage share of SHG is 100 per

cent. On the other hand, the research findings disclose that 100 per cent of suicides farmers' outstanding debt from non-institutional agencies was at 13 to 24 per cent interest rate. Another startling fact is that 100 per cent of suicides farmers' outstanding debt at the rate of 35 to 44 per cent interest was provided micro-finance institutions. It is obvious that the non-institutional credit markets are the huge debt trappers, which compel the farmers into distress and eventual suicides.

In Guntur District, distribution of average borrowed amount according to rate of interest among different institutions and non-institutions at the rate of 9 to 12 per cent interest is 86.7 percent by the institutional agencies and 13.2 per cent by the non-institutional agencies. The various institutional agencies percentage share is 51.2 per cent commercial bank, 13.1 per cent rural bank and 35.2 per cent cooperative bank. Among non-institutional agencies, it is SHG, which claims 100 per cent. On the other hand, micro-finance institutions claim 100 per cent status as non-institutional agencies, which disbursed loans at 13 to 24 per cent as well as 45 to 54 per cent interest rate to the suicides farmers. In Guntur, too the non-institutional credit markets seem to have business at the cost farmers' suicides.

In Ananthapur District, Distribution of average borrowed amount according to rate of interest among different institutions and non-institutions at 9 to 12 per cent interest rate by the institutional agencies is 88.5 per cent and that of non-institutional agencies is 11.4 per cent. The percentage share of institutional sources is 34.5 per cent commercial bank, 35.5 per cent rural bank and 29.9 per cent cooperative bank correspondingly. Among non-institutional agencies, SHG provided 100 per cent loan at 9 to 12 per cent rate of interest. On the other hand, 100 per cent of suicides farmers' outstanding debt to non-institutional agencies at the rate of 13 to 24 per cent interest as well as 35 to 44 per cent interest is to micro-finance institutions. No doubt in Ananthapur district too, the exploitative nature of non-institutional credit markets have bloody share in the suicide deaths of farmers.

From the tabulations, it is clear that the interest rate levied by different institutions and agencies ranged from 9 per cent to 44 per cent in all the selected three districts. Many farm households borrowed loans at 25 per cent to 34 per cent

interest. We observe many farm households borrowing loans at 25 per cent to 34 per cent interest especially in Guntur and Warangal districts. Another significant feature in the structure of borrowing by the farm households is that micro-finance institutions have provided loans at 45 per cent to 54 per cent interest rate. Such phenomenon was very prevalent in Guntur district. Such high interest rates levied by the micro-finance institutions on the loans borrowed by the farm households resulted in socio-economic distress and discrimination. The coercive methods employed by the micro-finance institutions to recover loans from the borrowers inflicted social shame and deflated dignity and worth of the farm household members. Such shameful harassment was unbearable, inescapable and inexplicable which generated suicidal tendencies among the farmers. In the past three years frustration levels among the farmers was steadily on the increasing trend, which resulted in farmers suicides.

6.11: Use Pattern⁸:

Borrowed Loans Expenditure and Utilization Pattern, The following table presents category wise expenditure and utilization details of borrowed loans by the suicide farmers households. It is a known fact that the farmers receive loans for agricultural purpose from both institutional as well as non-institutional agencies. Very often, such loans are diverted for other purposes like social functions, house constructions and debt repayments. 6.15a table tries to probe into the nature of spending the borrowed loans.

We hit upon category wise utilisation of borrowed loans by suicides farmers household in tables 6.15a, 15b and 15c correspondingly. In the field survey, it was obvious that the borrowed loans utilisation could be broadly divided into two major categories:

1. **Agriculture Expenditure:** sinking bore wells, buying live stocks, investment on seeds, fertilizers, pesticides, farm equipments and crop management
2. **Non-agriculture Expenditure:** health, education, housing, marriage and consumption.

Table number 6.15a portrays the expenditure and utilisation pattern of borrowed loans by the Warangal district suicides farmers of Telangana region. On an average, each farm household in the Warangal district expended Rs 3,41,205 (35 per cent) and Rs 6,32,874 (64.9 per cent) on productive and unproductive purposes respectively. Amongst the productive purposes, the highest amount of loan was utilised for digging or repair of bore wells. Roughly, it amounts to 42.1 per cent of the total loan. Another 41.1 per cent of the total loan used for the purchase of agricultural inputs like seed, fertilizer, pesticides, diesel or engine oil. Similarly, more than 9.3 per cent of the total received loan diverted to land lease payment. Suicides farmers' households invested about 5.9 per cent of the borrowed funds for land development and purchasing the livestock. If we go by farm size category, semi-medium suicides farmers' farm investment was less than 35 per cent of total loan whereas marginal and small suicides farmers invested 35 per cent of total loan on productive purposes.

The highest expenditure or utilization of borrowed loans in the non-productive purposes category was mainly on the celebration of children marriages. Its percentage share is 29.9 per cent. Consumption and health account for nearly 38.13 per cent of the total borrowed loan. House construction, which includes farm building and repairs, consumed 15.8 percent of the total borrowed loan. Semi-medium suicides farmers spent more than 65 per cent of borrowed total loan on non-productive investment. Marginal and small suicides farmers whereas spent less than 65 per cent of total borrowed loan on non-productive investment.

6.15b table depicts the expenditure and utilisation statistics of borrowed loans in Guntur district by the suicides farmers. On an average farm household in the Guntur district incurred expenditure of Rs 7,54,082 (39.9 per cent) and Rs 11,32,688 (60 per cent) on productive and unproductive purposes respectively. 58.3 percent was reportedly used for the productive purposes like the purchase of agricultural inputs seeds, fertilizers, pesticides, and diesel oil and crop management. Similarly, more than 24.5 per cent of the total borrowed loan amount was spent on lease payment for land. About 16.5 per cent of the borrowed funds were utilised for developing the land and purchase of livestock and other allied agricultural activities. Medium size farmers invested more than 50.7 per

cent of the total borrowed loan on productive purposes. Marginal, small and semi-medium suicides farmers whereas invested less than 40 per cent on the productive purposes of the total borrowed loan amount.

Amongst the non-productive purposes, 34.4 per cent out of total borrowed loan was spent on children marriages and domestic needs. Nearly 19.9 per cent of total borrowed loan was allocated for consumption expenditure. Around 18.2 per cent was diverted towards house construction including farm building and repairs. In terms of farm size medium suicides, farmers invested 49.2 per cent on non-productive purposes, while marginal small, semi-medium suicides farmers accounted for more than 65 per cent expenditure on non-productive purposes of the total loan.

Table number 6.15c portrays the expenditure and utilisation pattern of borrowed loans by the Ananthapur district. On an average, each farm household in the Ananthapur district expended Rs 688815.2 (23.6 per cent) and Rs 2224422 (76.3 per cent) on productive and unproductive purposes respectively. Amongst the productive purposes, the highest amount of loan was utilised for digging or repair of bore wells. Roughly, it amounts to 36.7 percent of the total loan. Another 54.9 percent of the total loan used for the purchase of agricultural inputs like seed, fertilizer, pesticides, diesel or engine oil. Suicides farmers' households invested about 8.3 percent of the borrowed funds for land development and purchasing the livestock. If we go by farm size category, small and medium suicides farmers' farm investment was less than 35 percent of total loan whereas marginal, semi-medium and small suicides farmers invested 20 percent of total loan on productive purposes.

The highest expenditure or utilization of borrowed loans in the non-productive purposes category was mainly on the celebration of children marriages. Its percentage share is 18.5 percent. Consumption and health account for nearly 58.10 percent of the total borrowed loan. House construction, which includes farm building and repairs, consumed 1.1 percent of the total borrowed loan. Marginal, Small, semi-medium, medium and large suicides farmers spent more than 65 percent of borrowed total loan on non-productive investment.

6.12: Range of Debt:

Table 6.16 reveals the distribution of households according to amounts of indebtedness among different size of landholdings from the selected three districts. In Warangal District, the largest number of farmers are indebted within the range between Rs. 1,50,000 to 2,00,000, which is nearly 36.8 per cent of the total in debtors followed by range of indebtedness between Rs. 1,00,000 to 15,00,000, which is almost 31.5 per cent of the total in debtors. Nearly 26.3 percent are indebted in the range between Rs.2, 00,000 and above. Among the different size of landholding, marginal farmers found to be indebted largely within the range of Rs.1, 00,000 to 1, 50,000, which is 58.3 per cent. Apart from this 22.2 per cent of small farmers and 12.5 per cent of semi-medium farmers too have indebtedness within the range Rs. 1, 00,000 to Rs.1, 50,000. 8.3 per cent of marginal, 50 per cent of small and 50 per cent of semi-medium farmers are indebted in the range between Rs 1, 50,000 to 2, 00,000. On the other hand, 16.6 per cent of marginal, 27.7 per cent of small and 37.5 per cent of semi-medium farmers are indebted above Rs. 2, 00,000. 16.6 per cent of marginal farmers are found to be indebted within the range of Rs.10, 000 to 50,000 only. The above statistical data indicates that the size of landholding has some degree of association with the amount of debt. In Guntur district, 54.8 per cent of the total farmers are indebted in the range of Rs. 2, 00,000 and above. Next 19.3 per cent are indebted in the range of Rs. 1, 50,000 to 2, 00,000. Nearly 16.1 per cent are indebted within the range of Rs. 1, 00,000 to 1, 50,000, while 6.4 percent are within the range of Rs. 10000 to 50000. As one moves up in the size group of landholding, 12.2 per cent of marginal and 33.3 per cent of small farmers are indebted within the range of Rs. 1, 50,000 to 2, 00,000. In the case of marginal and small farmers 50 per cent of marginal farmers, 6.6 percent of small farmers are indebted within the range of Rs. 1, 00,000 to 1, 50,000 while the 25 per cent of marginal farmers are indebted within the range of Rs. 10000 to 50,000. On the other hand, 12.5 per cent of marginal farmers are indebted within the range of Rs. 50,000 to 1, 00,000 correspondingly. Only 60 per cent of small farmers, 100 per cent semi-medium and 100 per cent medium farmers are indebted within the range of Rs. 2,00,000 and above. In the case of Ananthapur, the largest numbers of farmers are indebted within the range of Rs. 2,00,000 and above, which is 45 per

cent of the total indebtedness. Nearly 31.6 per cent of total indebtedness falls in the range between Rs. 15,00,000 to Rs.2,00,000. Subsequently 20 per cent are indebted in the range between Rs.1, 00,000 to Rs.1, 50,000. There are 3.3 per cent farmers in the range between Rs. 50,000 to 1, 00,000. Among the size of landholding, marginal farmers found to be indebted largest within the range of Rs 1,50,000 to 2,00,000, which is 57.1 per cent. Also 40 per cent of small and 29 per cent of semi-medium farmers respectively fall in the above same range. Whereas in the case of indebted range between Rs. 200000 and above, we find 14.2 percent of marginal farmers, 26.6 per cent of small, 51.6 per cent of semi-medium, 83.3 per cent of medium and 100 per cent of large farmers respectively. In the case of marginal, small, semi-medium and medium farmers 28.5 per cent, 33.3 per cent, 12.6 per cent and 16.1 per cent are indebted within the range of Rs.1, 00,000 to 150000 correspondingly. In the range of Rs. 50,000 to 1, 00,000, there are only 6.4 per cent of semi-medium farmers.

Thus, categories wise distribution of indebtedness among farm households in selected Guntur and Ananthapur districts is 45 percent out of total borrowed loan in the range of Rs. 2, 00,000 and above. In Warangal, district large numbers of farm households' indebtedness is in the range of Rs. 1, 50,000 to 2,00,000. It is found that in all the three districts loans borrowed by marginal farmers is in the range between Rs. 1, 00,000 to 1, 50,000. Small farmers indebtedness is Rs. 2, 00,000 and above. In Warangal and Guntur districts medium and large farmers borrowed loans around Rs. 2, 00,000. In Ananthapur as special case, the borrowed loan stands out to be Rs.14, 00,000 by large farmers. It may be noted that the distribution of households with higher amounts of debt is very similar in all the three districts. When we look at the distribution of households by size of holdings and consequent incurred debts, stark differences stare at us. As one moves up in the size group of landholding, we notice rise in the percentage of households that falls in the higher debt groups. However, the relationship is not one to one with distribution spread also to both lower and upper ends. This indicates that the size of landholding household has some degree of association with the amount of debt.

6.13: Adoption of Farm Technology¹⁰: Information regarding the use of various inputs used by suicides farmers' from selected sample households helps to

know the adoption of modern technology and whether it is good and superior for the farm operation is presented table 6.17.

In Warangal, only 34.2 per cent farmers used good seeds and 73.8 per cent of farmers used bad seeds. Various landholdings disclose the fact that nearly 94.7 per cent bad and only 5.2 per cent of good fertilizer was used by different size of landholdings. In case of pesticides, 89.4 per cent were bad pesticides and only 10.5 per cent good pesticides were sprayed in different size of landholdings. In Guntur, in the case of seeds, 54.8 per cent bad seeds and 45.1 per cent good seeds were sown by all categories of farm households, while 80.6 per cent bad fertilizer and 19.3 good fertilizer was supplied to the farms by all categories of farm households. When it comes to pesticides, 22.3 per cent good and 77.5 bad pesticides were sprayed by all categories of farm households. In the case Ananthapur district, there were 83.3 per cent of good seeds and 16.6 per cent bad seeds used by all categories of farm households. In case of fertilizers, 18.3 per cent good and 81.6 per cent bad fertilizers were used by all categories of farm households. The percentage uses of pesticides disclose that only 13.3 per cent good pesticides and 86.6 per cent of bad pesticides were utilised by all categories of farm households. Thus, among all selected farm households more the 75 per cent of selected suicides farm households used bad seeds, fertilizer and pesticides.

Information regarding the use of various inputs and expenditure incurred due to such experiments by suicides farmers' from selected samples facilitate us to know the employment and adoption of modern technology, its expenditure and eventual assistance in either enhancement of production or accumulation of debts. Table 6.18 points to the degree of using modern technology and inputs among the different categories of suicides farmers in all the three selected districts.

In Warangal, large quantity of suicides farmers bought high yielding variety of seeds (RCH seeds), costly fertilizers and pesticides. Statistical data divulges that 20.4 percent marginal, 21.3 per cent small and 19.6 per cent semi-medium farmers incurred expenditure on RCH cotton seeds. 30.5 per cent marginal, 32.4 per cent small and 40.1 per cent semi-medium farmers invested for fertilizers. Whereas 49 per cent marginal, 46 per cent small and 40 per cent semi-medium suicides farmers spent on pesticides. In Guntur, the findings reveal that

large number of farmers used kalyanee cottonseeds. It is found that 16.2 per cent marginal, 16.8 per cent small, 15.5 per cent semi-medium and 15.2 per cent medium farmers incurred expenditure on seeds. Utilization of fertilizers is quite common among all categories of suicides farmers. In the case of marginal, small, semi-medium and medium farmers, using of fertilizer is worked out as 24.8 per cent, 26.7 per cent, 28.8 per cent and 25.5 per cent, respectively. Usage of pesticides was prevalent among marginal and medium farmers. 59.9 per cent of marginal and 59.8 per cent of medium farmers sprayed pesticides.

In Ananthapur district, seed expenditure, is calculated to be 25 per cent for the marginal, 24.6 per cent for small, 25.2 per cent for semi-medium, 24.1 per cent for medium and 32.3 per cent for large farmers respectively. while the fertilizer investment is accounted to be 34.5 per cent for marginal, 30.7 percent for small, 29.9 per cent for semi-medium, 33.2 per cent for medium and 30.7 per cent for large farmers. On the other hand, pesticides expenditure is calculated as 40.4 percent for marginal, 44.6 percent for small, 44.8 per cent for semi-medium, 42.5 percent for medium and 36.8 percent for large farmers.

6.14: Distribution by Risk Factors:

Suicides are a culmination of multiple risk factors. Inferring risk factors from news reports will be difficult for two reasons. First, the purpose of the news reports is to broadcast the events and happenings. They immediately do not intend to highlight all possible risk factors. Second, as the concerned individual is no more surviving. Hence, news reports or any investigation will have to rely on information or circumstantial evidence collected from others.

In Table 6.19 shows that the 129 households where risk factors have been reported (see table-6.20). They are classified into: natural risks (drought, monsoon failure, cyclone hailstorm, pest attack) and output related/ manmade risks (crop failure, non-remunerative price). The latter is classified into inputs related risk (credit, irrigation, seed, pesticides), human capital (basic needs, health, education, violence related risk (family disputes, death alcohol consumption) and psychological (pressure for repayment of debt) fact.

Natural risks are the most common and output related risks are less frequent. However, inputs related risks are high and uniform across the three districts, irrespective of social background, class background and landholding background. Among the non-production risks, the psychological risk is most frequent. Disaggregated risks show that certain risks like the risk of pest attack are high in district, which have mono-cropping and high percent of area under non-food crops (Warangal, Guntur, and Ananthapur). Unremunerative price is a major problem in area where non-food crops are grown (Guntur, Warangal). Among the inputs risks the risks of credit turning into debt is very high in all the three districts and class of farmers. The risk of failure of bore well is prevalent in the two districts of Warangal and Ananthapur and not in Guntur district. Largely farmers of Warangal than Guntur and Ananthapur districts faced non-regulated markets and the risks of spurious seed.

6.15: Distribution of Various Methods of Suicides Employed:

In Table 6.20, all 129 reported suicide cases are tabulated according to the methods employed by the dead farmers. Most of them resorted to either consumption of pesticides or hanging. Percentage wise calculations reveal that 82.5 per cent dead famers consumed pesticide, 11.6 per cent of them hanged themselves and remaining 3.1 per cent of farmers resorted to other methods. In Warangal, 92.1 per cent of farmers who committed suicides chose consumption of pesticides and 7.8 per cent farmers hanging. In Guntur 93.5 per cent of farmers, preferred consumption of pesticides and 6.4 per cent, farmers opted other means to end life. In Ananthapur district, 76.5 per cent ended life by consuming pesticides, 20 per cent by hanging and 3.3 per cent by other means respectively out of the total suicides.

Farmers need pesticides to protect crops from pest and insects. Hence, pesticides, insecticides and fertilizers have become part of farmers' life and livelihood. Very same so-called friends today unfortunately have turned out to be the nooses. At this point in time, one has to probe into the role and implications of pesticides in the life of farmers and farm sector. Pesticides are both poisonous and medicinal. Regrettably, the medicinal value and worth of pesticides is either forgotten or not understood properly. Excessive usage of pesticides seems not only increase the cost of farming but also poisoning the natural fertility and

immunity of the soil and the crops, which result in low yields and poor quality of agricultural products, thus drawing the farmers and farm sector into a vicious circle of investment, borrowing of loans, indebtedness and poor returns. Hence, all most all the farmers are distressed and frustrated. Good many of them committed suicides in order to escape from this vicious circle. If healthy remedial measures are not initiated on war footing slowly many farmers will be distancing from agriculture and farm sector will head towards natural death. Eventually such developments will have socio-cultural, religious and psychological repercussions on the society and its living members. It is high time that we come together to evolve healthy management and usage of pesticides.

In most of the suicide cases, we observe two kinds of experiences and emotions, which have provoked the farmers to end life. Accumulated debts and failure of the crops are the dominant experiences of most of the suicides farmers. In variably all of them have experienced disappointment and discouragement. Such constant and continuous unpleasant and unbearable experiences and emotions have caused shock and destroyed hope. Most of them lost meaning in life and bowed down to impulsion and ended life. Some ended in a fit of disappointment and frustration, others after a prolonged pre-meditation. In either case, it is very interesting to discover that most of them preferred to end their life in the very same promising life-giving field. Though Mr. Narayana a 45-year-old farmer from Ananthapur district sprayed several times pesticides in the field, crop was not healthy and promising seeing the deplorable condition, he committed suicide in the field itself instantaneously. A 26-year-old farmer from Dachehalli having mulled over the grim situation of his field and crop, purchased Avantu Pesticide, took to the field and consumed to end life. This was a pre-meditated and planned suicide. First time crop failure did not disturb his mind, but it was second time crop failure which perturbed him a lot. In Janagam, a 30-year-old farmer had suffered a crop failure for the second time and was under great stress due to mounting debts. On August 14, he waited for his family to go out and consumed pesticide when he was alone at home. In all these cases, we realize that aged farmers were under impulsions and compulsions committed suicides whereas younger farmers took some time, perhaps hoped for the better times, when such hopes dried up in pre-planned manner ended their precious lives. Of course such

generalization based on few cases and limited information may not be proper and scientific. In some cases adverse suicide news as better solution to tide over farm crisis from print and electronic media seem to have had devastating influence on the debt-trapped farmers. Without second thought, they too have resorted to suicides to escape from debts and eventual family responsibilities.

6.16.1 Comparing Suicides and Non-Suicides Farmers:

The second part attempts provided comparison of farmers' suicides with non- suicides¹² in Andhra Pradesh. We identified if at all there were to exist some non- suicides households that are similar to the suicides families in the village in term of landholdings and other assets. This particular information was obtained from the village sarpanch, village revenue officers and elders of the village. For an objective analysis, we also used data collected from 87 non-suicide families from 87 villages. A statistical exercise is done to compare case-control households. Logistic regression model was used to examine the influence of different factors, namely, size of the landholding (SL), Family size (SF), Total indebtedness (TI), Total expenditure (TE), per hectore expenditure (PHE), Value of livestock in rupees (LSV).The influence of various socio-economic factors on the probability of incidence of suicide was investigated through LOGIT Model

6.16.2: Dependency Ratio¹³:

Table 6.2.1 depicts the average size of family and dependency ratio to size of group in suicides and non- suicides families. In the case of suicides families, the average size of family is found to be largest in the large farmers groups. In other group it is 4.2 in the category of small farmers, 4.2 in the semi-medium farmers, 4.7 in the case of medium farmers and 3.9 in the case of marginal groups. In the case of non- suicides farmers, the average size of family is found as 3.7, 3.9, 4.0, 3.9 and 5.0 per cent in the case of marginal, small, semi-medium ,medium and large, respectively. It is found that dependency ratio is largest in the large farmers group in the suicides farmers groups, i.e. 5. For other size groups in this suicides farmer, the ratio is worked out as 2.3 per cent 3.2, per cent, 2.5 per cent, and 1.7 per cent in the case of marginal, small, semi-medium and medium farmers, respectively. In non- suicides farmers, the ratio comes around slightly different and shows that it is 1.2 per cent, 2.0 per cent,1.1 per cent,1.6 per cent

and 1.5 per cent in the case of marginal, small, semi-medium and medium, large farmers, respectively

6.16.3: Family Characteristics:

It could be seen from above table that out of 129 suicides cases studied 99 belonged to nuclear families the rest 30 victims lived in joint families. In non-suicides families 66 out of 87 were nuclear households the rest 21 were living in joint families.

Table.6.2.3 shows the Distribution of Suicides and Non-Suicides farmers by Caste wise. The total households are distributed by schedule caste (SC) and schedule tribe (ST), backward caste (BC) and other caste (OC). The caste distribution of suicides households shows that 56 per cent of suicides belong to BCs, 30 per cent belong to OCs and SCs and STs together accounted for 15 percent. In non- suicides households 62 per cent of BCs, OCs 24 per cent, and SC and ST Accounted for 12 per cent.

The size-class of land owned in suicide case households is given in Table 6.2.4. It shows that 21 per cent are marginal and their average holdings is 1.8 per cent , 37 per cent are small farmers and their average holdings is 3.7 , 34 per cent semi-medium and their average holdings is 6.8 , 10 per cent medium and their average holdings is 13.5, 1 per cent are large and their average holdings is 25.

Table-6.2.5 depicts the Cropping pattern among farmers suicides and non-suicides in study area. In the case of suicides farmers, paddy cultivation under irrigation is 17.5 and cotton is 68, chillies are 48.7 and groundnut is 1 acres respectively. On other hand, paddy cultivation under unirrigated is also worked out as 17.5 and for cotton is 126.72, chillies are 10 and for groundnut 332.2 acres and sweet orange cultivation is 5.38. In the case of non- suicides farmer, paddy cultivation under irrigation is 9 acres and unirrigated is 2.4 while cotton cultivation under irrigated is 88.63 and unirrigated is 76.7 acres. For groundnut cultivation under irrigation is negligible and unirrigated is 198.81 acres, respectively.

The Comparing Suicides and Non- Suicides households by Average outstanding debt among different size of landholdings are presented table no-

6.2.6. The average amount received by suicides farmers from institutional sources is calculated Rs.12,951, Rs. 29,456, Rs. 41,818, Rs. 36,826 and Rs. 4,11,527 in the case of marginal, small, semi-medium, medium and large farmers, respectively. On the other hand, the average amount received by non- suicides farmers from institutional sources is worked out as Rs.14,166, Rs. 21,871, Rs. 39,250, Rs. 55,714 and Rs. 1,75,000 in the case of marginal, small, semi-medium, medium and large farmers, respectively.

Suicides farmers received loans from Non- institutional sources is estimated as Rs. 1,20,572, Rs.1,73,076, Rs.1,80,621, Rs.3,26,959, and Rs. 7,42,500 in the case of marginal, small, semi-medium, medium and large farmers, respectively. while in the case of Non- suicides farmers received loans from Non- institutional sources is registered as Rs.30,000, Rs.35,892, Rs.35,000, Rs.32,142 and Rs. 2,00,000 in the case of marginal, small, semi-medium, medium and large farmers, respectively.

6.16.4: Logistic Model¹⁵:

Logistic regression model was used to examine the influence of different factors, namely, size of the landholding (SL), Family size (FS), Total indebtedness (TI), Total expenditure (TE), Per hectore expenditure (PHE), Value of livestock in rupees (LSV).The influence of various socio-economic factors on the probability of incidence of suicide was investigated through LOGIT Model. The dependent variable (probability of incidence of suicide) was expected to lie between 0 and 1.00. In the present study suicide farmers and non-suicide farmers made the dependent variable discrete. Thus, the univariate LOGIT Model was useful for the analysis.

The LOGIT Model is formulated as follows:

$$\ln [P_i / (1-P_i)] = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + U_i$$

Where,

ln = Natural logarithm

P_i=Probability that the ith farmer will be a farmer who committed suicide

1-P_i=Probability that the ith farmer will not commit suicide

X_1 : size of the landholding (SL)

X_2 : Family size (SF)

X_3 : Total indebtedness (TI)

X_4 : Total expenditure (TE)

X_5 : per hectore expenditure (PHE)

X_6 : Value of livestock in rupees (LSV)

b_1 to b_6 : are the coefficients of the six independent variables.

U is error term

Estimates the logit model are presented in table 6.2.7. From the analysis we found that four out of six explanatory variables have statistically significant impact on farmers' suicides. From the above table it is inferred that if size of land goes up by one unit (1 hct) then log of odd ratio in favour of committing suicide will come down by 1.77 unit. If total indebtedness goes up by a unit then, the log of odd ratio committing suicides will increase by 5.88 unit. If per hectore expenditure goes up by one unit, than log of odd ratio committing suicides will go down by 6.54 units. If total live stock value goes up by one unit, and then log of odd ratio in committing suicides will go down by -0.0001unit. Out of the six variable only two variables namely total expenditure and size of family are insignificant. Form the probability of LR statistics and McFadden R-squared it is clearly known that the logit regression is highly significant. That means, logit model provides a good fit for the data.

6.17: Summing up:

From the 129 suicide cases under analysis, basic particulars of the deceased indicate that the Guntur district, the rate of involvement of female farmers in agriculture is very less. Poverty is one of the reasons why female farmers have directly involved in Anantapur and Warangal districts. Moreover, 2/3 of the farmers who committed suicides are from the age group of 30 to 50. In all the three districts, majority of farmers who committed suicides are married. Most of them happen to be illiterates and many are new to agriculture with less than five years of experience. Among the three selected districts if one were to

look for the statistics based on experience, Anantapur stands out with high number of inexperienced farmers who committed suicides followed by Guntur and Warangal respectively. It is noticed that the large majority of suicides farmers had borrowed heavily from non-institutional sources at high rates of interest. On other hand only 10 to 15 per cent of the loans raised by suicides, farmers were from institutional sources. The high amount of loans received by the small farmers and semi-medium farmers from the institutional sources only. Comparing suicide case and non-suicide control households, one observes that the former have slightly higher proportion of nucleus families, have a higher average family size, ownership of assets and access to basic amenities is lower, and more importantly the average amount of loan is much higher and the average value of produce is lower. A statistical exercise reiterates our observation that indebtedness and absence of bullock (a productive as well as a liquid asset) are significant risk factor.

Table: 6.1: Basic Particulars of Suicides Families in Selected Districts

Characteristics		Name of the District						Total	
		Warangal		Guntur		Anathapur		N	%
		N	%	N	%	N	%		
Gender	Male	37	97.3	31	100	58	96.6	126	97.6
	Female	1	2.6	0	0	2	3.3	3	2.3
	Total	38	100	31	100	60	100	129	100
Age	21-30	6	15.7	5	16.1	17	28.3	28	21.7
	31-40	13	34.2	14	45.2	23	38.3	50	38.7
	41-50	16	42.1	6	19.4	14	23.3	36	27.9
	51-60	1	2.6	3	9.7	4	6.6	8	6.2
	60+	2	5.2	3	9.7	2	3.3	7	5.4
	Total	38	100	31	100	60	100	129	100
Marital status	Never Married	0	0	0	0	2	3.3	2	1.5
	Currently married	37	97.3	31	100	53	88.3	121	93.7
	Widow/Widowed	1	2.6	0	0	5	8.3	6	4.6
	Total	38	100	31	100	60	100	129	100
Education	Illiterate	30	78.9	26	83.8	35	58.3	91	70.5
	Below primary	2	5.2	1	3.2	2	3.3	5	3.8
	Primary	2	5.2	0	0	13	21.6	15	11.6
	Secondary	4	10.5	3	9.6	9	15	16	12.4
	Higher secondary	0	0	1	3.2	1	1.6	2	1.5
	Total	38	100	31	100	60	100	129	100
Experience in farming	0-5	26	68.4	21	67.7	29	48.3	76	58.9
	06-10	9	23.6	3	9.6	20	33.3	32	24.8
	11-20	2	5.2	7	22.3	8	13.3	17	13.1
	21-40	1	2.6	0	0	0	0	1	0.7
	41-60	0	0	0	0	2	3.3	2	1.5
	70 Above	0	0	0	0	1	1.6	1	0.07
	Total	38	100	31	100	60	100	129	100

Note: N indicates number of farmers' suicides households.

Sources: Field survey during the year 2010 to 2011.

Table: 6.2: Distribution of Farmers' Suicides Landholding in Selected Districts

Size of landholdings	Warangal		Guntur		Ananthapur	
	N	AL	N	AL	N	AL
Marginal	12	1.9	8	1.6	7	2.05
Small	18	3.6	15	3.5	15	3.9
Semi-Medium	8	5.8	5	6.6	31	6.7
Medium	-	-	3	16	6	12.2
large	-	-	-	-	1	25

Note: N indicates number of farm suicide households, AL indicates average land. Land size-category is as follows: 0-2.5 acres-Marginal, 2.5-5 acres- Small, 5-10 acres Semi- medium, 10-20 acres-Medium and 20+ acres-Large.

Sources: Field survey during the year 2010 to 2011

Table: 6.3: Cumulative Frequency of Landholding of the Suicides Families from Selected Districts

Size of landholding	Number of households	Cumulative households	Cumulative % households	Land operated	Cumulative Landholding	Cumulative % land operated
Ananthapur						
Marginal	7	7	11.7	14.37	14.3	3.7
Small	15	22	36.7	59.01	73.38	19.1
Semi-medium	31	53	88.3	210.1	283.38	74.1
Medium	6	59	98.3	73.7	357.18	93.4
large	1	60	100.0	25.02	382.2	100
Gini Concentration Ratio					= 0.25	
Guntur						
Marginal	8	8	27.5	13	13	9.2
Small	15	23	72.4	46.2	59.2	42.2
Semi-medium	5	28	89.6	33	92.2	65.7
Medium	3	31	100.0	48	140.2	100
large						
Gini Concentration Ratio					= 0.39	
Warangal						
Marginal	12	12	31.5	23.9	23.9	17.5
Small	18	30	78.9	65.8	89.7	65.6
Semi-medium	8	38	100	46.9	136.6	100
Medium	-	-	-	-	-	-
large	-	-	-	-	-	-
Gini Concentration Ratio					= 0.20	
Overall						
Marginal	27	27	21.2	51.2	51.2	7.7
Small	46	73	57.4	171	222.2	33.7
Semi-medium	44	117	92.1	290	512.2	77.7
Medium	9	126	99.2	121.7	633.9	96.2
large	1	127	100	25.02	658.5	100
Gini Concentration Ratio					=0.0087	

Sources: Field Survey During 2010 to 2011.

Table 6.4.
Distribution of Farmers' Suicides Households by Ownership Holdings from Selected District.

		Marginal farmers			Small farmers			Semi-medium			Medium farmers			large farmers		
		<i>NO</i>	<i>OP</i>	<i>AV</i>	<i>NO</i>	<i>OP</i>	<i>AV</i>	<i>NO</i>	<i>OP</i>	<i>AV</i>	<i>NO</i>	<i>OP</i>	<i>AV</i>	<i>NO</i>	<i>OP</i>	<i>AV</i>
Warangal	Pure Owner	10 (26.3)	17.96 (12.8)	1.7	11 (28.9)	39.98 (28.5)	3.6	2 (5.2)	11.29 (8)	5.6	-			-		
	Pure tenant	-	-		1 (2.6)	3 (2.1)	3	1 (2.6)	6 (4.2)	6	-			-		
	Owner cum tenant	2 (5.2)	4.93 (3.5)	2.4	5 (13.1)	18.38 (13.1)	3.6	6 (15.6)	36.4 (25.9)	6	-			-		
Guntur	Pure Owner	4 (12.9)	4.5 (3.2)	1.1	-	-		-	-		-		-	-		-
	Pure tenant	3 (9.6)	6 (4.2)		3 (9.6)	10 (7.1)								-		
	Owner cum tenant	1 (3.2)	2.5 (1.7)	2.5	12 (38.7)	43.5 (30.9)	3.6	5 (16.1)	30.1 (21.4)	6.2	3 (9.6)	44 (31.2)	14.6	-		
Anathapur	Pure Owner	7 (11.6)	15.3 (3.9)	2.1	13 (21.6)	51.7 (13.5)	3.9	24 (40)	162.3 (42.3)	6.7	5 (8.5)	61.7 (16.1)	12.3	1 (1.6)	25.02 (6.7)	25.02
	Pure tenant							1 (1.6)	7 (1.8)	7	0			-		
	Owner cum tenant	-	-		3 (5)	9.24 (2.4)	3.8	5 (8.3)	35.7 (9.3)	7.1	1 (1.6)	14 (3.6)	14	-		

Note: N -indicates number of Suicides households, OP- indicates operated area by suicides farmers. AL- indicates average land.

*Figures in parentheses indicate that percentage households and landholding

Sources: Field survey during the year 2010 to 201

Table 6.5a
Distribution of Tenant according to Terms of Tenancy in Warangal.

Warangal	Fixed Money			Fixed Product			Share of Product			Total no. of Tenant
Pure Tenant										
	75:25	50:50	Nil	75:25	50:50	Nil	75:25	50:50	Nil	
Marginal										
Small		1 (100)								1
Semi-Medium			1 (100)							1
Medium	-	-		-	-	-	-	-	-	
Large	-	-		-	-	-	-	-	-	
Owner cum Tenant										
Marginal	-	2 (100)	0	-	-	-	-	-	-	2
Small	3 (60)		2 (40)	-	-	-	-	-	-	5
Semi-Medium	2 (33.3)		4 (66.6)	-	-	-	-	-	-	6
Medium										
Large	-	-	-	-	-	-	-	-	-	

Note: Figures in parenthesis indicate that percentages.

Sources: Field survey during the year 2010-2011.

Table 6.5b
Distribution of Tenant according to Terms of Tenancy in Guntur.

Guntur	Fixed Money			Fixed Product			Share of Product			Total no. of Tenant
	75:25	50:50	Nil	75:25	50:50	Nil	75:25	50:50	Nil	
Pure Tenant										
Marginal	1 (33.3)		2 (66.6)	-	-	-	-	-	-	3
Small	3 (100)		0	-	-	-	-	-	-	3
Semi-Medium	-	-		-	-	-	-	-	-	
Medium	-	-		-	-	-	-	-	-	
Large	-	-		-	-	-	-	-	-	
Owner cum Tenant										
Marginal	1 (100)		0	-	-	-	-	-	-	1
Small	9 (75)		3 (25)	-	-	-	-	-	-	12
Semi-Medium	4 (80)		1 (20)	-	-	-	-	-	-	5
Medium	2 (66.6)		1 (33.3)	-	-	-	-	-	-	3
Large	-	-	-	-	-	-	-	-	-	

Note: Figures in parenthesis indicate that percentages.

Sources: Field survey during the year 2010-2011.

Table 6.5c
Distribution of Tenant according to Terms of Tenancy in Anantapur.

Ananthapur	Fixed Money			Fixed Product			Share of Product			Total no. of
	75:25	50:50	Nil	75:25	50:50	Nil	75:25	50:50	Nil	
Pure Tenant										
Marginal	-	-	-	-	-	-	-	-	-	-
Small	-	-	-	-	-	-	-	-	-	-
Semi-Medium	-	-	1 (100)	-	-	-	-	-	-	1
Medium	-	-	-	-	-	-	-	-	-	-
Large	-	-	-	-	-	-	-	-	-	-
Owner cum Tenant										
Marginal	-	-	-	-	-	-	-	-	-	-
Small	-	-	3 (100)	-	-	-	-	-	-	1
Semi-Medium	-	-	5 (100)	-	-	-	-	-	-	5
Medium	-	-	1 (100)	-	-	-	-	-	-	1
Large	-	-	-	-	-	-	-	-	-	-

Note: Figures in parenthesis indicate that percentages.

Sources: Field survey during the year 2010-2011.

Table 6.6
Distribution of Farmers' Suicides Households by Caste Wise.

Social Groups		Size of Landholding												
		Marginal Farmers		Small Farmers		Semi-Medium Farmers		Medium Farmers		large Farmers		Total		
Caste	N	%	N	%	N	%	N	%	N	%	N	%	N	%
	ST	0	-	3	7.8	1	2.6	-	-	-	-	-	4	10.5
	OBC	10	26	7	18.4	7	18.4	-	-	-	-	-	24	63.1
	OCs	0	-	6	15.7	0	-	-	-	-	-	-	6	15.7
	Total	12	31.5	18	47.3	8	21	-	-	-	-	-	38	-
Guntur	SC	2	6.4	2	6.4	0	-	0	-	-	-	-	4	12.9
	ST	0	0	1	3.2	0	-	0	-	-	-	-	1	3.2
	OBC	5	16.1	10	32.2	2	6.4	0	-	-	-	-	17	54.8
	OC	1	3.2	2	6.4	3	9.6	3	9.6	-	-	-	9	29
	Total	8		15		5		3					31	-
Anathapur	SC	1	1.6	0	0	1	1.6	1	1.6	0			3	5
	ST	0	0	2	3.3	2	3.3	0	0	0			4	6.6
	OBC	4	6.6	9	15	14	23.3	5	8.3	0			32	53.3
	OC	2	3.3	4	6.6	14	23.3	0		1	1.6		21	35
	Total	7		15		31		6		1			60	-

Note: N indicate number of Suicides farmers households.

Sources: Field survey during the year 2010 to 2011 presents

Table: 6.7: Distribution of Area under Irrigation among Different size of Landholding

Size of landholding	Warangal				
	Total Operated Area	Area under Irrigation	%	Area under Non-irrigated	Percentage
Marginal	25.84	2.64	10.2	23.2	89.7
Small	65.35	4	6.1	61.37	93.7
Semi-Medium	46.75	2.2	4.7	44.53	95.2
Medium	-	-	-	-	-
large	-	-	-	-	-
pooled	137.94	8.84	6.4	129.1	93.5
Guntur					
Marginal	23	20	86.6	3	13
Small	53.5	51.5	96.2	2	3
Semi-Medium	37	31	83.7	6	16.2
Medium	36	30	83.3	6	16.6
large	-	-	-	-	-
pooled	149.5	132.5	88.62	17	11.37
Ananthapur					
Marginal	7	-	-	7	100
Small	54.01	-	-	54.01	100
Semi-Medium	184.9	1	0.5	183.9	99.5
Medium	71.72	-	-	71.71	100
large	24	-	-	24	100
pooled	341.63	1	0.29	340.62	99.7

Sources: Field survey during the year 2010 to 2011

Table: 6.8: Cropping Pattern of Suicides Families from Selected District

Cropping Pattern	Warangal		Guntur		Ananthapur	
	Acres	%	Acres	%	Acres	%
Canal irrigated cotton	4	2.9	64	42.8	-	-
Bore Well irrigation cotton	94.78	69.1	8	5.3	-	-
Rain-fed cotton	18.02	13.1	6	4	-	-
Canal irrigated chillies	-	-	48.75	32.6	-	-
Bore Well irrigated chillies	2	1.4	8	5.3	-	-
Rain-fed chillies	-	-	-	-	-	-
Canal irrigated paddy	2.84	2	14.75	9.8	-	-
Bore Well irrigated paddy	15.5	11.3	-	-	2	0.5
Rain-fed paddy	-	-	-	-	-	-
Canal irrigated Ground Nut	-	-	-	-	1	0.2
Bore Well irrigated Ground Nut	-	-	-	-	22.75	6.5
Rain fed Ground Nut	-	-	-	-	309.52	90.5
Canal irrigated Sweet orange	-	-	-	-	-	-
Bore Well irrigated Sweet orange	-	-	-	-	5.38	1.5
Rain fed Sweet orange	-	-	-	-	-	-
Total area irrigated	137.14	100	149.5	100	341.65	100

Sources: Field survey during 2010 to 2011

Table :6.9; Distribution of Income Rang Among Farmers Suicides Families

Income Rang	Size of Landholding					
	Marginal Farmers	Small Farmers	Semi-Medium Farmers	Medium Farmers	Large Farmers	Total
	Warangal					
Less than 10000	-	-	-	-	-	-
10001-15000	-	-	-	-	-	-
15001-20000	9(23.6)	13(34.2)	5(13.1)	-	-	27(71)
20001-25000	3(7.8)	5(13.1)	-	-	-	8(21)
25001-30000	-	-	3(7.8)	-	-	3(7.8)
Total	12	18	8	-	-	38
	Guntur					
Less than 10000	1(3.2)	-	-	-	-	1(3.2)
10001-15000	2(6.4)	-	-	-	-	2(6.4)
15001-20000	4(12.8)	12(38.7)	2(6.4)	1(3.2)	-	19(61.2)
20001-25000	1(3.2)	3(9.6)	3(9.6)	1(3.2)	-	8(25.8)
25001-30000	-	-	-	1(3.2)	-	1(3.2)
Total	8	15	5	3	-	31
	Anathapur					
Less than 10000	-	-	-	-	-	-
10001-15000	4(6.6)	4(6.6)	5(5.3)	-	-	13(21.6)
15001-20000	3(5)	6(10)	7(11.6)	1(1.6)	-	17(28.3)
20001-25000	-	4(6.6)	12(20)	1(1.6)	-	17(28.3)
25001-30000	-	-	5(5.3)	3(5)	-	8(13.3)
30001-35000	-	1(1.6)	2(3.3)	1(1.6)	-	4(6.6)
Above 40001	-	-	-	-	1(1.6)	1(1.6)
Total	7	15	31	6	1	60

Note: Figures in parentheses indicate that percentage households

Sources: Field survey during the year 2010 to 2011.

Table :6.10: Distribution of Suicides Borrower Farmers among Different Size of Groups

Size of Landholding	Number of borrower household	Average amount	
		Per borrower	Per hector
Warangal			
Marginal	12	101495	127400
Small	18	176200	120100
Semi-medium	8	205437	87559
Medium	-	-	-
Large	-	-	-
All Categories	38	158764	110204
Guntur			
Marginal	8	99803	153544
Small	15	235394	156929
Semi-medium	5	334000	126515
Medium	3	483333	75520
Large	-	-	-
All Categories	31	240301	123949
Ananthapur			
Marginal	7	178142	218771
Small	15	175472	111528
Semi-medium	31	192558	74803
Medium	6	291512	59290
Large	1	1154027	115310
All Categories	60	212524	85810

Sources: Field survey during 2010- 2011.

Table 6:11: Distributions of Average Outstanding Loan for Suicides Farmers' Households by Size-Class across Sources.

Size of landholding	Institutional		Non-Institutional	
	Warangal			
	A.DEBT	%	A.DEBT	%
Marginal	5000	6.4	72827	93.5
Small	11434	9.09	114299	90.9
Semi-medium	28780	14.7	166925	85.2
Medium	0	0	0	0
larger	0	0	0	0
Total	45214	11.3	354051	88,6
Guntur				
Marginal	5333	5.2	96438	94.7
Small	11000	5.4	191638	94.5
Semi-medium	27250	10.5	232200	89.4
Medium	26666	5.8	453333	94.4
Large	0		0	
Total	70249	6.7	973609	93.2
Ananthapur				
Marginal	15887	9.1	158571	90.8
Small	24527	15.8	130413	84.1
Semi-medium	28906	21.6	104752	78.3
Medium	34406	11.5	263772	88.4
Large	411527	35.6	742500	64.3
Total	515253	26.9	1400008	73

Note: An institutional source includes commercial banks, regional rural banks and cooperative banks. Non-institutional sources include money lenders, traders' landlords, relatives and friends, SHGs, micro finances institutions, others, etc.

*A.DEBT indicates average indebtedness

Sources: Field survey during the year 2010 to 2011.

Table 6.12a
Distribution of Average borrowed Amount in Different Institutions and Non- Institutions among Different size of Groups in Warangal

WARANGAL <i>Different institutions</i>	Size of landholding											
	Marginal farmer		Small farmers		Semi-Medium		Medium farmers		large farmers		Total	
	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount
commercial bank	0	0	6	14333 (33.1)	2	30000 (52.1)	-	-	-	-	8	44333 (34.5)
Rural bank	2	15000 (60)	4	16250 (35.5)	2	27500 (47.8)	-	-	-	-	8	58750 (45.8)
cooperative bank	4	10000 (40)	4	151549 (33.1)	0	0	-	-	-	-	8	25154 (19.6)
Sub-Total	6	25000 (14.1)	14	45737 (16.6)	4	57500 (21.5)					24	128237 (17.8)
<i>Different Non-Institutions</i>												
SHG	12	8445 (5.5)	17	9941 (4.3)	8	11000 (5.2)	-	-	-	-	37	29386 (4.9)
Micro finance	4	22500 (14.8)	7	30000 (13.1)	1	30000 (14.3)	-	-	-	-	12	82500(14)
Money lender	12	29166 (19.2)	20	41450 (18.1)	9	49444 (23.6)	-	-	-	-	41	120060 (20.3)
Trader	10	33540 (22.1)	18	34055 (14.9)	8	41812 (19.9)	-	-	-	-	36	109407 (18.5)
Landlord	12	27083 (17.9)	19	34684 (15.1)	8	43250 (20.6)	-	-	-	-	39	105017 (17.8)
friends/relatives	12	10416 (6.8)	13	65384 (28.6)	8	14875 (7.1)	-	-	-	-	33	90675 (15.4)
Other	1	20000 (13.2)	5	13000 (5.6)	4	18750 (8.9)	-	-	-	-	10	51750 (8.7)
Sub-total	63	151150 (85.8)	99	228514 (83.2)	46	209131 (78.4)					208	588795 (82.2)
Total	69	176150	113	274551	50	266631					232	717032

Sources; Field survey during the year 2010-2011.

Note; N=indicate number of borrower with outstanding loan. The borrowers are from 38 farmers' suicides cases.

*Figures in parentheses indicate that percentage of average amount and number of borrower.

Table 6.12b
Distribution of Average borrowed Amount in Different Institutions and Non- Institutions among Different Size of Groups in Guntur.

GUNTUR	Size of landholdings											
	Marginal farmers		Small farmers		semi-medium		Medium farmers		large farmers		Total	
	N	A. Amount	NO	A. Amount	NO	A. Amount	NO	A. Amount	NO	A. Amount		A. Amount
commercial bank	2	10000 (62.5)	5	16000 (51.6)	3	31666 (51.3)	2	12500 (18.5)	0	-	12	70166 (39.8)
Rural bank	1	6000 (37.5)	0	0	0	0	1	15000 (22.2)	0	-	2	21000 (11.9)
cooperative bank	0	0	1	15000 (48.3)	1	30000 (48.6)	1	40000 (59.2)	0	-	3	85000 (48.2)
Sub-total	3	16000(9.6)	6	31000(10.9)	4	61666	4	67500(14)		-	17	176166
Different Non-Institutions												
SHG	6	11333 (7.5)	12	12083 (4.7)	3	13000 (4.2)	1	15000 (3.6)	0	-	22	51416 (4.5)
Micro finance	7	20428 (13.6)	14	33571 (13.2)	5	30000 (9.7)	3	40000 (9.6)	0	-	29	123999 (11.0)
Money lender	5	37000 (24.7)	15	56875 (22.4)	6	73333 (23.9)	4	95000 (22.9)	0	-	30	262208 (23.3)
Trader	4	31250 (20.9)	14	38214 (15.0)	5	80000 (26.1)	3	106666 (25.8)	0	-	26	256130 (22.8)
Landlord	6	30833 (20.6)	15	48000 (18.9)	4	55000 (17.9)	3	126666 (30.6)	0	-	28	260499 (23.2)
friends/relatives	5	18385 (12.3)	13	19538 (7.7)	4	55000 (17.9)	1	30000 (7.2)	0	-	23	122923(10.9)
Other	0	0	2	45000(17.7)	0	0	0	0	0		2	45000(4.0)
Sub-Total	33	149229 (90.3)	85	253281 (89)	27	306333 (83.2)	15	413332 (84.9)	0			1122175 (86.4)
Total	36	165229	91	284281	31	367999	19	480832	0		17	1298341

Sources; Field survey during the year 2010-2011.

Note; N=indicate number of borrower with outstanding loan. The borrowers are from 38 farmers' suicides cases.

*Figures in parentheses indicate that percentage of average amount and number of borrower.

Table 6.12c.
Distribution of Average borrowed Amount in Different Institutions and Non- Institutions among Different Size of Groups

Ananthapur	Size of Landholdings											
	Marginal farmers		Small farmers		Semi-Medium		Medium farmers		large farmers		Total	
	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount
commercial bank	4	25555 (72.8)	9	28444 (34.0)	17	32489 (33.7)	4	40000 (34.3)	1	500000 (100.0)	35	626488 (77.2)
Rural bank	2	9500 (27.1)	3	30000 (35.9)	9	35000 (36.3)	2	51532 (44.2)	0	0	16	105532 (13.0)
cooperative bank	0	0	2	25000 (29.9)	10	28895 (29.9)	2	25000 (21.4)	0	0	14	78895 (9.7)
Sub-Total	6	35055 (16.1)	14	83444 (33.6)	36	96384 (29.3)	8	116532 (29.8)	1	500000 (47.8)	65	810915 (36.7)
<i>Different Non- Institutions</i>												
SHG	5	9800 (5.3)	13	11923 (7.2)	19	11368 (4.8)	5	14600 (5.3)	1	45000 (8.2)	43	92691 (6.6)
Micro finance	0	0	0	0	1	25000 (10.7)	2	27500 (10.0)	1	70000 (12.8)	4	122500 (8.7)
Money lender	7	56428 (30.9)	17	47117 (28.6)	33	76181 (32.7)	6	76333 (27.9)	1	120000 (22.0)	64	376059 (26.8)
Trader	5	45000 (24.6)	13	42923 (26.0)	21	57285 (24.6)	6	64983 (23.7)	1	80000 (14.6)	46	290191 (20.7)
Landlord	7	50000 (27.4)	13	45083 (27.4)	26	42576 (18.3)	3	61666 (22.5)	1	200000 (36.6)	49	399325 (28.5)
friends/relatives	4	21250 (11.6)	12	17458 (10.6)	22	20113 (8.6)	6	28433 (10.3)	1	30000 (5.5)	45	117254 (8.3)
Other	-	-	-	-	-	-	-	-	-	-	-	-
Sub-Total	28	182478 (83.8)	68	164504 (66.3)	122	232523 (70.6)	28	273515 (70.1)	6	545000 (52.1)	251	1398020 (63.2)
Total	34	217533	82	247948	158	328907	36	390047	7	1045000	316	2208935

Sources; Field survey during the year 2010-2011.

Note; N=indicate number of borrower with outstanding loan. The borrowers are from 38 farmers' suicides cases.

*Figures in parentheses indicate that percentage of average amount and number of borrower.

Table:6.13a.
Distribution of Average borrowed Amount According to Rate of Interest among Different Size Groups in Warangal

Size of Landholding	Rate of Interest											
	9 - 12%		13 - 24%		25 - 34%		35 - 44%		45 - 54%		Total	
	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount
Marginal	18 (25)	9518 (16.9)	48 (68)	24287 (43.1)	-	-	4 (5)	22500 (39.9)	-	-	70	56305
Small	31 (27)	12277 (14.8)	75 (66)	40213 (48.7)	-	-	7 (6)	30000 (36.3)	-	-	113	82490
Semi-Medium	12 (24)	16916 (10.3)	37 (74)	117026 (71.3)	-	-	1 (2)	30000 (18.2)	-	-	50	163942
Medium	-	-	-	-	-	-	-	-	-	-	-	-
Large	-	-	-	-	-	-	-	-	-	-	-	-

Note; N=indicate number of borrower with outstanding loan. The borrowers are from 38 farmers' suicides cases.

*Figures in parentheses indicate that percentage of average amount and number of borrower.

Sources; Field survey during the year 2010-2011.

Table 6.13b
Distribution of Average borrowed Amount according to Rate of Interest among Different Size groups in Guntur

Different size of landholding	Rate of Interest											
	9 - 12%		13 - 24%		25 - 34%		35 - 44%		45 - 54%		Total	
	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount
Marginal	9 (25)	10444 (12.6)	5 (13)	18385 (22.3)	15 (41)	32999 (40.1)	-	-	7 (19)	20428 (24.8)	36	82256
Small	18 (19)	13333 (11.3)	15 (16)	22932 (19.4)	44 (48)	47911 (40.6)	-	-	14 (15)	33571 (28.5)	91	117747
Semi-medium	7 (23)	23427 (13.1)	4 (13)	55000 (30.8)	14 (46)	69999 (39.2)	-	-	5 (5)	30000 (16.6)	30	178426
Medium	5 (25)	19000 (9.6)	1 (5)	30000 (15.2)	10 (50)	107999 (54.8)	-	-	4 (20)	40000 (20.3)	20	196999
Large	-	-	-	-	-	-	-	-	-	-	-	-

Note; N=indicate number of borrower with outstanding loan. The borrowers are from 31 farmers' suicides cases

*Figures in parentheses indicate that percentage of average amount and number of borrower.

Sources; Field survey during the year 2010-2011.

Table :6.13c:
Distribution of Average borrowed Amount according to Rate of Interest among Different Size Groups in Ananthapur.

Different Size of landholding	Rate of Interest											
	9 - 12%		13 - 24%		25 - 34%		35 - 44%		45 - 54%		Total	
	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount	N	A. Amount
Marginal	11 (32)	15474 (7.9)	4 (11)	21250 (10.9)	19 (55)	157631 (81.1)	-	-	-	-	34	194355
Small	27 (32.9)	20407 (24.5)	12 (14.6)	17458 (21)	43 (52)	45234 (54.4)	-	-	-	-		83099
Semi-Medium	55 (34.8)	24950 (19.1)	22 (13.9)	20113 (14.5)	80 (50.6)	60377 (46.2)	1 (0.6)	25000 (19.1)	-	-		130440
Medium	13 (36.1)	29697 (19.2)	6 (16.6)	28433 (18.4)	15 (41.6)	68859 (44.5)	2 (5.5)	27500 (17.8)	-	-		154489
Large	2 (28.5)	272500 (53.8)	1 (14.2)	30000 (5.9)	3 (42.8)	133333 (26.3)	1 (14.2)	70000 (13.8)	-	-		505833

Note; N=indicate number of borrower with outstanding loan. The borrowers are from 60 farmers' suicides cases

*Figures in parentheses indicate that percentage of average amount and number of borrower.

Sources; Field survey during the year 2010-2011.

Table :6.14a:
Distribution of Average borrowed Amount According to Rate of Interest
among Different Institutions and Non- institutions in Warangal.

Different institutions	Rate of interest				
	9 - 12%	13 - 24%	25 - 34%	35 - 44%	45 - 54%
	A. Amount	A. Amount	A. Amount	A. Amount	A.Amount
Commercial bank	18250 (37.8)	-	-	-	-
Rural bank	18750 (38.9)	-	-	-	-
Cooperative	11179 (23.2)	-	-	-	-
Sub -total	48179 (61.7)	-	-	-	-
<i>Different Non- Institutions</i>					
SHG	29862 (100.0)	-	-	-	-
Micro finance	-	-	-	33000 (100.0)	-
Money lender	-	35341 (25.8)	-	-	-
Trader	-	37441 (27.4)	-	-	-
Landlord	-	35000 (25.6)	-	-	-
friends/relatives	-	12696 (9.3)	-	-	-
Other	-	16000 (11.7)	-	-	-
Sub-Total	29862 (38.2)	136478	-	33000	-
Total	78041	136478	-	33000	-

Note: *Figures in parentheses indicate that percentage of average amount and number of borrower.

Sources: Field survey during the year 2010-2011.

Table :6.14b:
Distribution of Average borrowed Amount according to Rate of Interest
among Different Institutions and Non- institutions in Guntur.

<i>Different Institutions</i>	Rate of interest				
	9 - 12%	13 - 24%	25 - 34%	35 - 44%	45 - 54%
	A. Amount	A. Amount	A. Amount	A. Amount	A. Amount
Commercial Bank	40833 (51.2)	-	-	-	-
Rural Bank	10500 (13.1)	-	-	-	-
Cooperative Bank	28333 (35.5)	-	-	-	-
Sub-Total	79666 (86.7)	-	-	-	-
<i>Different Non- Institutions</i>					
SHG	12136 (100.0)	-	-	-	-
Micro Finance	-	-	-	-	30448 (100.0)
Money Lender	-	-	63833 (38.2)	-	-
Trader	-	-	56538 (33.8)	-	-
Landlord	-	-	46607 (27.9)	-	-
Friends/Relatives	-	25909 (53.5)	-	-	-
Other	-	22500 (46.4)	-	-	-
Sub-Total	12136 (13.2)	48409 (100)	166978 (100)	-	30448 (100)
Total	91802	48409	166978	-	30448

Note: *Figures in parentheses indicate that percentage of average amount.

Sources; Field survey during the year 2010-2011.

Table :6.14c:
Distribution of Average borrowed Amount according to Rate of Interest
among Different Institutions and Non- Institutions in Ananthapur.

<i>Different Institutions</i>	Rate of Interest				
	9 - 12%	13 - 24%	25 - 34%	35 - 44%	45 - 54%
	A. Amount	A Amount	A. Amount	A. Amount	A. Amount
Commercial Bank	32015 (34.5)	-	-	-	-
Rural Bank	32941 (35.5)	-	-	-	-
Cooperative Bank	27782 (29.9)	-	-	-	-
Sub-Total	92738 (88.5)	-	-	-	-
<i>Different Non- Institutions</i>					
SHG	12027 (100.0)	-	-	-	-
Micro Finance	-	-	-	37500 (100.0)	-
Money Lender	-	-	56476 (35.2)	-	-
Trader	-	-	53389 (33.3)	-	-
Landlord	-	-	50250 (31.3)	-	-
Friends/Relatives	-	20835 (100.0)	-	-	-
Other	--	-	-	-	-
Sub-Total	12027 (11.4)	20835	160115		
Total	104765	20835	160115	37500	

Note: *Figures in parentheses indicate that percentage of average amount.

Sources: Field survey during the year 2010-2011.

Table 6.15a.
Category Wise Utilisation of Loans Borrowed by Suicides Farmers' household in Warangal District

Warangal	Marginal	Small	Semi-Medium	Medium	Large	Overall
Agriculture Expenditure						
Bore well	30555 (31.9)	61875 (48.5)	51428 (43.4)	-	-	143858 (42.1)
Crop Investment	35400 (37.0)	44722 (35.1)	56875 (48.0)	-	-	136997 (41.1)
livestock	8000 (8.3)	0	0	-	-	8000 (2.3)
Lease	10000 (10.4)	12000 (9.4)	10000 (8.4)	-	-	32000 (9.3)
Land Development	11600 (12.1)	8750 (6.8)	0	-	-	20350 (5.9)
Sub-Total	95555 (35)	127347 (38.1)	118303 (32.1)		-	341205 (35)
Non- Agriculture Expenditure						
Marriage	50000 (28.2)	51111 (24.7)	83333 (33.4)	-	-	184444 (29.1)
Consumption	32000 (18.0)	35555 (17.2)	50875 (20.4)	-	-	118430 (18.7)
Drinking	15000 (8.4)	10000 (4.8)	10000 (4.0)	-	-	35000 (5.5)
Education	0	40000 (19.3)	25000 (10.3)	-	-	65000 (10.2)
House	30000 (16.9)	70000 (33.8)	0	-	-	100000 (15.8)
Non-farm	0	0	0	-	-	0
Health	50000 (28.2)	0	80000 (32.1)	-	-	130000 (20.5)
Sub-Total	177000 (64.9)	206666 (61.8)	249208 (67.8)	-	-	632874 (64.9)
Total	272555	334013	367511	-	-	974079

Note: *Figures in parentheses indicate that percentage of average amount expenditure.

Sources: Field survey during the year 2010-2011.

Table :6.15b:
Category wise Utilisation of Loans Borrowed by Suicides Farmers'
Household in Guntur District.

GUNTUR	Marginal	Small	Semi-Medium	Medium	Large	Overall
Agriculture Expenditure						
Bore well	-	-	-	-	-	-
Crop Investment	65000 (81.2)	83333 (60.6)	132000 (76.1)	163333 (44.9)	-	443666 (58.3)
livestock	-	-	-	100000 (27.5)	-	100000 (13.2)
Lease	15000 (18.7)	39166 (28.4)	41250 (23.8)	90000 (24.7)	-	185416 (24.5)
Land dev	0	15000 (10.9)	0	10000 (2.7)	-	25000 (3.3)
Sub-Total	80000 (36.2)	137499 (34.6)	173250 (31.3)	363333 (50.7)	-	754082 (39.9)
Non- Agriculture Expenditure						
Marriage	0	90000 (34.6)	100000 (26.3)	200000 (56.7)	-	390000 (34.4)
Consumption	38916 (27.6)	52500 (20.2)	70000 (18.4)	60000 (17.0)	-	221416 (19.5)
Drinking	20000 (14.2)	26500 (10.2)	15000 (3.9)	42500 (12.0)	-	104000 (9.1)
Education	-	33750 (13.0)	50000 (13.1)	50000 (14.1)	-	133750 (11.8)
House	40000 (28.4)	56666 (21.8)	110000 (28.9)	-	-	206666 (18.2)
Non-farm	-	-	35000 (9.2)	-	-	35000 (3.0)
Health	41856 (29.7)	-	-	-	-	41856 (3.6)
Sub-Total	140772 (63.7)	259416 (65.3)	380000 (68.6)	352500 (49.2)	-	1132688 (60)
Total	220772	396915	553250	715833	-	1886770

Note: *Figures in parentheses indicate that percentage of average amount expenditure.

Sources: Field survey during the year 2010-2011.

Table 6.15c
Category Wise Utilisation of Loans Borrowed by Suicides' Farmers
household in Ananthapur District.

ANANTAPUR	Marginal	Small	Semi-Medium	Medium	Large	Overall
Agriculture Expenditure						
Bore well	31666.67 (46.0)	31000 (28.9)	50333.33 (40.1)	60000 (40.6)	80000 (33.3)	253000 (36.7)
Crop Investment	37142.86 (53.9)	51000 (47.6)	55172.41 (43.9)	75000 (50.8)	160000 (66.6)	378315.3 (54.9)
livestock	0	25000 (23.3)	20000 (15.9)	12500 (8.4)	0	57500 (8.3)
Lease amount	-	-	-	-	-	-
Land Development	-	-	-	-	-	-
Sub-Total	68809.53 (17.8)	107000 (32.5)	125505.7 (20.3)	147500 (34.5)	240000 (20.7)	688815.2 (23.6)
Non- Agriculture Expenditure						
Marriage	85000 (26.8)	77500 (34.8)	250000 (50.8)	0	0	412500 (18.5)
Consumption	46000 (14.5)	51571 (23.2)	57222 (11.6)	66666 (23.8)	154027 (16.8)	375486 (16.8)
Drinking	21500 (6.7)	26000 (11.7)	24117 (4.9)	28333 (10.1)	0	99950 (4.4)
Education	30000 (9.4)	2000 (0.9)	41000 (8.3)	27500 (9.8)	0	100500 (4.5)
House	0	0	0	25000 (8.9)	0	25000 (1.1)
Non-farm	80000 (25.2)	45000 (20.2)	63125 (12.8)	82500 (29.4)	0	270625 (1.2)
Health	54333.33 (17.1)	20000 (9.0)	56028 (11.3)	50000 (17.8)	760000 (83.1)	940361.3 (42.2)
Sub-Total	316833.3 (82.1)	222071 (67.4)	491492 (79.6)	279999 (65.4)	914027 (79.8)	2224422 (76.3)
Total	385642.9	329071	616997	427499	1154027	

Note: *Figures in parentheses indicate that percentage of average amount expenditure.

Sources: Field survey during the year 2010-2011.

**Table :6.16:
Frequency Distribution According to Range of Debt among Different Size of
Groups**

District	Range of Indebtedness	Size of Landholding					
		Marginal farmers	Small farmers	Semi-medium farmers	Medium farmers	Large farmers	total
Warangal	10000-50000	2 (16.6)	-	-	-	-	2 (5.2)
	50000-100000	-	-	-	-	-	0
	100000-150000	7 (58.3)	4 (22.2)	1 (12.5)	-	-	12 (31.5)
	150000-200000	1 (8.3)	9 (50)	4 (50)	-	-	14(36.8)
	200000-and above	2 (16.6)	5 (27.7)	3 (37.5)	-	-	10(26.3)
	Total	12 (100)	18 (100)	8 (100)	-	-	38 (100)
Guntur	10000-50000	2 (25)	-	-	-	-	2 (6.4)
	50000-100000	1 (12.5)	-	-	-	-	1 (3.2)
	100000-150000	4 (50)	1(6.6)	-	-	-	5(16.1)
	150000-200000	1 (12.5)	5(33.3)	-	-	-	6(19.3)
	200000-and above	-	9 (60)	5(100)	3 (100)	-	17(54.8)
	Total	8 (100)	15(100)	5(100)	3(100)	-	31(100)
Anathapur	10000-50000	-	-	-	-	-	
	50000-100000	-	-	2(6.4)	-	-	2(3.3)
	100000-150000	2(28.5)	5(33.3)	4(12,6)	1(16.6)	-	12(20)
	150000-200000	4(57.1)	6(40)	9(29)	-	-	19(31.6)
	200000-and above	1(14.2)	4(26.6)	16(51.6)	5(83.3)	1(100)	27(45)
	Total	7(100)	15(100)	31(100)	6(100)	1(100)	60(100)

Note: * Figures in parentheses indicate that percentage category wise farm households.

Sources: Field survey during the year 2010 to 2011.

Table 6.17
Adoption of Farm Technology among Different Size of Groups

Size of Landholdings	Seed		Fertilizer		Pesticides	
	Good	Bad	Good	Bad	Good	Bad
Cotton	Warangal					
Marginal	3	9	2	10	2	10
Small	9	9	0	18	1	17
Semi-Medium	1	7	0	8	1	7
Medium	0	0	0	0	0	0
Large	0	0	0	0	0	0
	13(34.2)	25(73.8)	2(5.2)	36(94.7)	4(10.5)	34(89.4)
Cotton	Guntur					
Marginal	2	6	5	3	3	5
Small	8	7	12	3	3	12
Semi-Medium	5	0	5	0	1	4
Medium	2	1	3	0	0	3
Large	0	0	0	0	0	0
	17(54.8)	14(45.1)	25(80.6)	6(19.3)	7(22.3)	24(77.5)
Groundnut	Ananthapur					
Marginal	5	2	3	4	1	6
Small	11	3	2	13	3	11
Semi-Medium	26	5	6	25	2	29
Medium	7	0	0	6	2	5
Large	1	0	0	1	0	1
Overall	50(83.3)	10(16.6)	11(18.3)	49(81.6)	8(13.3)	52(86.6)

Note: * Figures in parentheses indicate that percentage

Sources: Field survey during the year 2010 to 2011

Table :6.18:
Distribution of Expensive on Farm Inputs Different Size Groups in Selected Districts.

Size of Landholding	Expensive on Inputs			
	Seeds	Fertilizer	Pesticides	Total
Warangal				
Marginal	2960 (20.4)	4422 (30.5)	7108 (49)	14490
Small	3100 (21.3)	4717 (32.4)	6728 (46.2)	14545
Semi-Medium	3300 (19.6)	6748 (40.1)	6745 (40.1)	16793
Medium	-	-	-	-
Large	-	-	-	-
Guntur				
Marginal	3200 (16.2)	4880 (24.8)	11590 (58.9)	19670
Small	3450 (16.8)	5475 (26.7)	11505 (56.3)	20430
Semi-Medium	3500 (15.5)	6400 (28.4)	12612 (56)	22512
Medium	3466 (15.2)	5866 (25.8)	13333 (58.8)	22665
large	-	-	-	-
Ananthapur				
Marginal	2763 (25)	3809 (34.5)	4460 (40.4)	11032
Small	3329 (24.6)	4152 (30.7)	6031 (44.6)	13512
Semi-medium	3346 (25.2)	3974 (29.9)	5956 (44.8)	13276
Medium	3654 (24.1)	5033 (33.2)	6431 (42.5)	15118
Large	4000 (32.3)	3800 (30.7)	4561 (36.8)	12361

Note: Figures in the brackets indicates percentage.

Sources: Households field survey during 2010 to2011.

**Table :6.19:
Distribution of Suicides Farmers according to Type of Risk**

Type of Risk	Guntur	Warangal	Ananthapur	Marginal	Small	Semi-Medium	Medium	Large
Drought	4	32	50	12	31	32	7	1
Monsoon	0	0	4	2	1	1	0	0
Cyclone	0	0	0	0	0	0	0	0
Hailstone	0	0	0	0	0	0	0	0
Pest attach	26	36	0	15	32	12	3	0
Output				3	13	1	1	0
Non-remunerative Input-Risk	19	5	2	3	12	8	3	0
Indebtedness	27	35	50	20	46	37	8	1
Crop failure	27	35	52	20	47	36	8	1
Bore well	1	23	20	9	11	8	3	0
Seed	1	26	2	8	14	7	0	0
Human Capital	0	0	0	0	0	0	0	0
Basic needs	0	0	0	0	0	0	0	0
Health	2	2	16	6	1	11	1	1
Education	0	0	0	00	0	0	0	0
Violence risk	0	0	0	0				
Family disputes	4	17	12	8	17	8	0	0
Death of family member	1	3	7	2	4	5	0	0
Alcohol	0	1	1	1	0	1	0	0
Psychological risks				0				
Pressure from mm	12	30	15	10	25	12	4	0
Institutional	2	8	12	3	2	5	0	0
Relatives & Friends	3	10	0	1	7	5	0	0
Trader	6	5	5	0	3	4	3	0
Total sample HH	31	38	60					

Sources: Field Survey During 2010 to 2011.

**Table :6.20:
Method- Wise Distribution of Suicides**

Method of suicides	Name of the District.			
	Warangal	Guntur	Ananthapur	Total
Pesticide Consumption	35 (92.1)	29 (93.5)	46 (76.6)	110 (85.2)
Hanging	3 (7.8)	-	12 (20)	15 (11.6)
Other(specify)	0	2 (6.4)	2 (3.3)	4 (3.1)
Overall	38	31	60	129

Note: Figures in the brackets indicates percentage.

Sources: Households field survey during 2010 to2011

**Table :6.2.1:
Average size of Suicides and Non- Suicides Farmers according to Depends
Size and No of Earners and Dependents**

Size of Landholding	Suicides				Non- suicides			
	Average size of family	Earn er	Depend ents	Depende ncy Ratio	Average size of family	Earn er	Depend ents	Depende ncy Ratio
Marginal	3.9	1.2	2.7	2.3	3.7	1.7	2	1.2
Small	4.2	1	3.2	3.2	3.9	1.3	2.6	2.0
Semi-Medium	4.2	1.2	3	2.5	4.0	1.9	2	1.1
Medium	4.7	1.7	3	1.7	3.9	1.5	2.4	1.6
Large	6.0	1	5	5	5.0	2	3	1.5

Source: Field Survey during 2010-2011.

**Table 6.2.2
Type of Suicides**

Type of Suicides	Suicides	Non-Suicides	Total
Nuclear	99 (76.7)	66 (75.8)	165
Joint	30 (23.2)	21 (24.1)	52
Total	129	87	217

Note: Figures in the brackets indicates percentage

Sources: Field survey -2010-2011.

Table 6.2.3
Distribution of Suicides and Non-Suicides Farmers by Landholdings.

Farm size	Suicides		Non-Suicides	
	N	AL	N	AL
Marginal	27 (20.9)	1.8	15 (17.2)	2.01
Small	48 (37.2)	3.7	40 (45.9)	3.6
Semi-Medium	44 (34.1)	6.8	24 (27.5)	6.9
Medium	9 (6.9)	13.5	7 (8)	14.3
Large	1 (0.7)	25	1 (1.2)	30

Note: Fingers in the brackets indicates percentage

Sources: Field survey -2010-2011.

Table.6.2.4
Distribution of Suicides and Non-Suicides Farmers by Caste wise.

Caste	Suicides	Non- Suicides	Total
SCs	11 (8.5)	7 (8)	18
STs	9 (6.9)	5 (5.7)	14
OBCs	73 (56.6)	54 (62)	127
OCs	36 (27.9)	21 (24)	59
All	130	87	216

Note: Fingers in the brackets indicates percentage

Sources: Field survey -2010-2011.

Table 6.2.5
Cropping Pattern among Farmers Suicides and Non- Suicides (acres).

Crops	Suicides		Non-Suicides	
	Irrigated	Un-irrigated	Irrigated	Un-irrigated
Paddy	17.5	17.5	9	2.4
Cotton	68	126.72	88.63	76.7
Chillies'	48.7	10	11.5	3
Ground Nut	1	332.2	0	198.81
Sweet Orange	0	5.38	0	5

Note: Fingers in the brackets indicates percentage

Sources: Field survey during 2010-2011

Table-6.3.6
Comparing Suicides and Non- Suicides households by Average outstanding debt among different size of landholdings. (Rs.)

Size of landholdings	Suicides		Non-Suicides	
	Institutional	Non-Institutional	Institutional	Non-Institutional
Marginal	12,951	1,20,572	14,166	30,000
Small	29,456	1,73,076	21,871	35,892
Semi-mi	41,818	1,80,621	39,250	35,000
Medium	36,826	3,26,959	55,714	32,142
large	4,11,527	7,42,500	1,75,000	2,00,000

Sources: Field survey -2010-2011.

Table 6.2.7
Results (Odds Ratio) of Logit Regression Analysis

Variables	Coefficient	Prob.level
C	2.286016	0.3818
SL	-1.770075	0.0201**
TI	5.88E-05	0.0000***
TE	-4.71E-06	0.7315
PHE	-6.54E-05	0.0269**
LSV	-0.000178	0.0002***
SF	-0.083412	0.8777
McFadden R-squared	0.829446	
LR statistic	236.9741	
Prob(LR statistic)	0.000000	

Note: *** denotes significant at 1% level.

**denotes significant at 5% level.

NOTES AND REFERENCES

1. Sample households have been classified into five groups, 0-2.5 acres-Marginal, 2.5-5 acres- Small, 5-10 acres Semi-medium, 10- 20 acres-Medium, and 20+ acres-Large.
2. To understand the skewedness, please see Gini concentration ratio worked out from table 6.2.
3. Parthasarathy, G (2002): 'Changing Agrarian Structure and Nature of Transition in Post-Green Revolution Period, in Y V Krishna Rao and S Subrahmanyam (ed.), Development of Andhra Pradesh: 1956-2001: A Study of Regional Disparities (Hyderabad: NRR Research Centre, CR Foundation,pp:78-79.
4. 50:50 bases of refers to the tenurial arrangement where lease and lesser get half of amount before showing respectively and 75:25 to the tenurial arrangement where lesser get the three-fourth of the fixed amount before showing respectively.
5. Cropping pattern form different district and regions. Crops can be classified into three types 1.Canal irrigated crops 2.Bore well irrigated crops, 3.Rain-Fed crops.
6. Formal credit includes Commercial Banks, Primary Agricultural Credit Co-operative societies, Grameena Banks.
7. Informal sources includes input dealers (seeds, fertilizers and pesticide shop dealers), commission agents who operate at market yards, rich farmers, microfinance, friends and relatives etc.
8. Borrowed loans utilisation could be broadly divided into two major categories, Agriculture Expenditure- sinking bore wells, buying live stocks, investment on seeds, fertilizers, pesticides, farm equipments and crop management and Non-agriculture Expenditure- health, education, housing, marriage and consumption.
9. One hector = 2.47 cents
10. Amount of fertilizer, pesticides and other inputs used, known through household survey.
11. Suicides farmers are where someone in the household committed suicide due to reasons related to agriculture.

12. Non- Suicides farmers is where the household having identical holdings as of suicides farmers and no suicidal in that households
13. Dependency ratio refers to number of dependent per earner.i.e no. of dependent/ number of earners.
14. Value of assets are calculated in monetary and it refers to the survey period 2010- 11.value of assets have been worked out after consulting the suicides farmers household members, as for example, how much he would expect at market rate for particular.
15. Srijit Mishra (2006), 'Farmers' Suicides in Maharashtra, *Economic and Political Weekly*, Vol.41, No.16, Pp.1538-45.

CHAPTER-VII
IMPACT OF GOVERNMENT POLICES ON ANDHRA PRADESH
AGRICULTURE

7.1: Introduction:

In this chapter critically reviewed various polices implemented by government to resolve the crisis and to develop suggest alternative policy frame work for implementation at administrative and peasant level. It has two parts. Part one explains policies implemented for agricultural growth. For the specific objectives of the study covered investment on agriculture and allied activates, irrigation and flood control, research and extension, credit facilities and minimum support price, gross capital formation in agriculture. While part two examines polices implemented for suicides farmers households at village level. For specific objectives of study covered the ex-gratia, Admission of children into Social Welfare Schools and hostels, Construction of houses under IAY, Provision of self employment .Data was collected from Directorate of Economics and Statistics organization, government of Andhra Pradesh and various years wise - plan budget reports in Andhra Pradesh.

7.2: Expenditure in Andhra Pradesh state agriculture:

The share of agriculture and allied activities in state government expenditure under various plans has declined from 11.78 per cent to 2.15 per cent during 1980-2003¹. Overall decline has been of the order of 81.74 per cent. While the expenditure on agriculture to total expenditure is around 7 per cent in Karnataka and 5 per cent at all India level but, it was only 3 per cent in Andhra Pradesh. In the year 1990-1991, 1993-94 and 2001-2002 the plan expenditure on agriculture was declined by 62.47, 99.63 and 54.73 per cent respectively. These are the worst years for the state agriculture. It means farmers have been at the marginal in the state policy domain. Andhra Pradesh has been achieving information technology development at the cost of agriculture and farmers. But such type of one-way development cannot assure the inclusive and sustainable growth either of the state or the country². In 2004-05, policy turnover on expenditure on agriculture and allied activities due to change new state

government and it's gave a priority to the agriculture sector in the view of farmers suicides in Andhra Pradesh³.

The Plan wise expenditure on Agriculture and allied activities in Andhra Pradesh is presented table 7.1. The share of agriculture and allied activity in state government expenditure under various plans has declined from 11.8 per cent in 1980-81 to 2.15 per cent in 2002-03. (See table-1) further it is increased to 6.19 per cent in 2004-05, it is come down to 3.66 per cent in 2007-08 again it is increased to 9.23 per cent in 2008-09 per cent in 2008-09. During 1990 to 2005, expenditure in agriculture decelerated due to liberalization policies and also withdrawal of state support system towards agriculture and this period also indicates that there are many farmers' suicides in the state of Andhra Pradesh. In recognition of this, in 2004-05, new state government of Andhra Pradesh has taken an unprecedented number of steps for giving boost to agriculture sector in the state. Year wise expenditure on agriculture and allied activities during the post reforms period has remained mere stagnant. It resulted in to an increase in the individual farm household level expenditure on creation of the infrastructural facilities. 1997-98, 2000-01, 2001-02 and 2006-07 and 2007-08 were the worst year for the agriculture sector. This period witnessed a sharp decline in the expenditure on agricultural and allied activities. And this is the period when the agrarian crisis has deeply rooted in the state of Andhra Pradesh and further manifested in the distressful act of committing suicides by farmers.

Graph 7.1 clearly noticed that Plan wise expenditure on Agriculture and allied activities in Andhra Pradesh. Until 2004, the expenditure on Agriculture and allied activities has decreasing trend, further it shows increasing trend.

7.3: Dilution of Research and extension services:

The policies pursued by the Govt. from the middle of 90s have weakened the extension system also. Every extension worker was supposed to guide more than 4000 farmers. The allocations for movement and maintenance were drastically cut. In addition the departments were bifurcated to eliminate sericulture. With these changes, the farmers in the underdeveloped areas were put to great disadvantage. The

disturbance caused for sericulture department that mainly cater to the needs of farmers in the rainfed districts like Anantapur, Mahabubnagar and parts of Chittoor was realized during 2001-04 when drought dominated the state⁴. According to Jayati Ghosh commission, which evaluated the crisis ridden agriculture of Andhra Pradesh pin – printed this lacuna of dilution of extension wing. However the government did not take note of it, since it was committed to the liberal policies. Just to pretend that they are for the cause of small and marginal farmers, they maintain less qualified (contract) extension employees and “adarsha rytulu” in place of qualified persons. In the wake of pauperization of peasants particularly in risk – prone areas like South Telangana, Rayalaseema and North coastal districts – there is a need for restoring the extension system in true sense.

Table 7.2 shows that Plan wise expenditure on agriculture research and extension in Andhra Pradesh .The expenditure on agricultural research was almost in ascending order (3.1 -12.0 per cent) up to 1994-95. But, there after it started declining. It declined from 12 per cent in 1994-95 to 1.0 per cent in 2002-03. Thereafter, it shows that increasing trend to 4.7 per cent in 2008-09. Similarly in case of agriculture extension services, the percent of expenditure on this was 4.9 during 1990-91. It continued to decline up to 2001-02 though there were some fluctuations during this period. (Table-7.2).

7.5: Expenditure on Irrigation:

Let us examine expenditure on irrigation and flood control activates in Andhra Pradesh. Until late into the 1980s, irrigation was a major area of public investment in the state and there after completely reversed since early 1990s⁵.

The Plan wise expenditure on irrigation and the flood control activates in Andhra Pradesh is presented table 7.3.The expenditure on irrigation declined significantly under various plans. During 1980-81, expenditure on irrigation is 58.1 per cent of total budget, after wards AP had the lowest share of agriculture spending in total plan expenditure till 2001-02 (Table 7.3). Further, there is increasing trend to

17.9 per cent of total budget in 2002-03. Again it was increased to 50.1 per cent of total budget in 2006-07, further it shows that there is decreasing trend till 2008-09.

Inadequate water supply is one of the most significant problems facing most farmers in Andhra Pradesh. There are only a few districts where levels of irrigation are high (especially surface irrigation) and rainfall is also adequate. In most parts of the state, ensuring water for crop cultivation has become not only a constant concern but also a major source of increased expenditure. Historically, canal irrigation has been very unevenly distributed across the state. In addition, the decline of surface water sources (especially tanks) because of neglect and other factors has led to greater reliance on the exploitation of groundwater, which entails substantial costs on individual cultivators, in the form of digging bore wells⁶. In term of area irrigated under different sources of irrigation, well irrigation is the main contributor followed by tank irrigation. Well irrigation is one, which has recorded continuous growth, while tank irrigation decline till 1990 s and stabilized thereafter⁷.

Distribution of gross irrigated area under different sources of irrigation in Andhra Pradesh is presented table7.5. The area under canal irrigation, which is registered during reform period, is more or less stabilizing while in the case of tank irrigation it shows decline trend area under irrigation. Regarding well irrigation area under irrigation it shows that there is increasing trend during this period.

Graph7.4 shows how wells have become the dominant source of irrigation in the state, displacing canal irrigation and tanks, both of which have declined in terms of absolute area covered. These reflect undesirable patterns of water use, which are also likely to lead to future problems in terms of water availability.

7.6: Minimum Support Price (MSP):

The volatility of crop prices has been a major source of income instability and distress for farmers in Andhra Pradesh. A substantial part of the recent price volatility can be related to external trade liberalization in agricultural products. From the first half of the 1990s onwards, the central government liberalized the imports and exports

of agricultural goods, which has led farmers to become much more exposed to international price fluctuations. This has meant that prices often bear no relation to state-level or national output trends, so that even periods of poor harvest can be associated with low prices. Sharp fluctuations in crop prices over the years also provide misleading signals to farmers, who tend to have high price response in terms of deciding the acreage under different crops⁸. The price volatility faced by farmers has been even sharper because the public procurement agencies have not been procuring sufficiently to ensure that Minimum Support Prices are maintained. This problem is even more acute for other cash crops such as cotton and groundnut. A further problem is that since the cost of cultivation is relatively high in Andhra Pradesh, the national MSP does not cover the costs for a substantial proportion of crops in the state. In fact, the Department of Agriculture, Government of Andhra Pradesh, on the basis of its own calculations of cost of cultivation and ANGRAU estimates, has been recommending higher MSP for most crops, which are typically not accepted by the CACP of the central government⁹.

Table 7.5 shows that Minimum Support Price and Market Price for Major Agriculture Commodities, Andhra Pradesh. According to the table (7.5) given above the minimum support price is often less than the market price for the period between 1990-91 to 2008-09. For instance, in 2004, the government of AP wanted the MSP of cotton (medium staple) to be at Rs 2,700 a quintal, while the union government fixed it at Rs 1,725; the figures for the groundnut crop are Rs 2,260 and Rs 1,400. For cotton MSP is Rs.2, 500 and groundnut is Rs. 2100 during 2008-09, which is fixed by government of India. It is a result of decontrolled input-output market. In this new type of market, farmers have to face market vagaries without any state support. Interesting fact is that, the market prices of agricultural commodities were higher than the Minimum Support Price for almost all crops. Even the market price for all crops was higher than the MSP but it also could not cover the cost of cultivation. Reason is that already the minimum support price is set down at lower level and the traders have the tendency of to just cross the MSP line. Though, the traders offered higher price, but they being the input dealers and moneylenders in Andhra Pradesh hence they take off their input price which is taken by farmers on credit and also the some

part of the loan amount or an interest of the same from the value of the produce that comes to them. As a result, nothing remains for livelihood of farm family and further agricultural operations. Hence, farmers need money for both the purposes i.e. consumption and cultivation. The farmers are not eligible for the institutional credit as they are defaulters of earlier bank credit. As a result again farmers borrow from private sources at higher rates of interest and the vicious circle of indebtedness continuous in future¹⁰.

7.7: Credit Market:

Agricultural sector in Andhra Pradesh brings into focus the lacunae in the rural credit systems, which have added to the woes of the farmers. Most of the rural credit in the state is still supplied from non-institutional sources, and it is estimated that formal credit meets less than 30 per cent of the credit requirements of the farmers. It is very important that the credit requirements of agriculture be assessed and met by the formal sector, and that farmers are liberated from enforced dependence upon private moneylenders¹¹. Subsequent to financial liberalization in the 1990s, there has been a significant deceleration in the growth of bank credit, particularly from commercial banks to rural areas. Also notable is the relative fall in proportion of bank credit flowing to the priority sectors, especially agriculture. The impact of the slowdown in rural banking has fallen disproportionately on poor and small borrowers¹².

Table 7.6 shows that Disbursement of Agricultural Credit in Andhra Pradesh since 1991 onwards. It reveals that the share of credit disbursed by co-operatives has come down from 44.3 to 34.7 per cent. However, the shares of Regional Rural Banks and Commercial Banks have increased by 1.7 and 8 per cent respectively for the year 1992-2001 in the state of Andhra Pradesh. The Co-operative institutions which are basically meant for lending credit to small and marginal farmers have not been successful in fulfilling their duties. The increased share of Commercial Banks in credit flow to agriculture indicates a preference for lending to big farmers over marginal farmers, which is an outcome of the banking sector reforms during the

nineties. Though, the share of commercial banks increased, it was not sufficient to fulfill the demand for credit by the farmers. Declining share of co-operatives in total credit flow pushed farmers to borrow from the private sources at high rates of interest. It means the banking sector reforms are at the root of the growing indebtedness and thereby suicides of farmers in the state of Andhra Pradesh. Looking at the crop loan disbursement, the share of commercial banks is quite higher than RRBs and co-operative banks. The co-operatives are meant for fulfilling the credit needs of the small, marginal and weaker sections of the agriculture. These institutions fail to address the target group. Hence, the share of commercial banks has increased and some of the farmers resorted to the private sources of lending. On the other hand RRBs did not approach to the rural masses. As a result, their share, both in crop and term loan is stagnated around 12 per cent. It means the financial institutions those who are especially meant for the rural development have failed to achieve their target and leaves farmers in the sustainable economic crisis¹³.

7.8: Capital Formation in Andhra Pradesh Agricultural:

Capital formation is important for economic growth¹⁴. Here we look at agricultural capital formation in Andhra Pradesh. The trends for two decades are presented in Table 7.7.

Table 7.7 gives details of gross fixed capital formation in agriculture in the state since 1980-81. In fact, fixed capital formation in agriculture reached a peak level of 11.8 per cent in 1986-87 and started declining to 6.8 per cent in 2002-03. By 2004-05, there was a slightly increasing trend to 9.3 per cent, further it is also increasing to 11.06 per cent in 2007-08. This is perhaps due to changes in rolling government part and give important to agriculture sector in the state.

Graph 7.5 Shows that agriculture capital formation in Andhra Pradesh. During post reform period, it shows below 10 per cent of capital formation in agriculture except 2005-06 and 2007-08.

Table 7.8 shows that the share of Agricultural Capital Formation among Private and Public in Andhra Pradesh. The share of public sector in GCFA in A.P. has been decreasing to 45 per cent in 1990-1991 and 44 per cent in 1991-92 as against of share of private in gross capital formation agriculture in Andhra Pradesh 55 per cent and 56 per cent of respective years. Between 1992-93 to 1994-95, the share of public sector GCFA in A.P increased. After wards share of public sector has consistently decreased until 2002-03. Thereafter, It shows increasing trend (Table 8).

Graph 7.6 looks that share of Agricultural Capital Formation among Private and Public in Andhra Pradesh. Private capital formation is always higher than government capital formation in agriculture except during 1993 to 1995.

7.9: Peasant level policies:

Having looked at polices for agriculture growth, now we will turn to policies implemented for suicides families at villages. For this specific objective of study was covered four indicates like ex-gratio, Admission of children into Social Welfare Schools and hostels, Construction of houses under IAY and Provision of self employment.

On the recommendations of the Cabinet Sub-Committee, Government has taken several steps to help the farmers. The steps taken in this regard are detailed below¹⁵:

Issued orders vide G.O.Ms. No.421 Revenue (D.A.II) Dept., dated: 1.6.2004 extending financial assistance of Rs.1.00 lakhs to the family / next Kith and kin of the deceased farmer as an economic support besides loan settlement of up to a ceiling of Rs.50,000/- as one time settlement. The ex-gratia so sanctioned shall be deposited in an authorized bank by opening of joint account of tahasildar and legal heirs. The expenditure for financial assistance shall initially be met by the concerned District Collector from out of the revolving fund. Which shall be reimbursed later from C.M.R.F. The genuine of the farm related suicides will be examined and recommended by a three member Committee of R.D.O.,D.S.P and AD of Agriculture.

In order to prove the farmer suicides as farmer's suicides he produce 13 documents those are presented below as per GO No. 421

1. First Information Report (FIR)
2. Panchanama report
3. Post Mortem Report (PMR)
4. Forensic Science Lab Report (FSL report)
5. Final report

(These five documents need to be obtained from police station)

6. Private loan documents as proof
7. Bank loan documents
8. Land Pass Book
9. Dependents certificate
10. Ration card
11. Three years agriculture pahani
12. Mandal level verification committee report (MLVC). (Three Member Committee consists of Mandal Revenue Officer (MRO), Police Sub Inspector (SI) and Agriculture Officer (AO).
13. Division Level Verification Committee Report (Three Member Committee consists of Revenue Divisional Officer (RDO), Deputy Superintend of Police (DSP) and Assistant Director of Agriculture (ADA).

Table-9 shows that selected families of ex-gratia in selected districts in Andhra Pradesh. In Ananthapur out of 60 suicides families only 55 families are received compensation while in the case of Warangal 32 families are selected for compensation out of 39 farmers' suicides. In Guntur, 25 families are selected for compensation out of 31 farmers' suicides in this district.

Admission of children into Social Welfare Schools and hostels:

One of the measures of suicides families is that Admission of children into Social Welfare Schools and hostels. But the study found that there was no one family benefited from this program among all suicides families

Construction of houses under IAY:

This is a mass housing scheme for the homeless. The process of identifying beneficiaries began in January 2008. The families are selected for below the poverty line, with an annual income not exceeding Rs 20,000; must not be a beneficiary of any other housing scheme or possess title over land proposed for the construction of a house; and must have the capacity to repay the loan within the stipulated period. This program also provides Construction of houses under IAY for suicides families but study noticed that there was no house construction for suicides families in all selected village.

Provision of self employment:

Through the National Rural Employment Guarantee Scheme (NREGS) provides enhancement of livelihood security, giving at least 100 days of guaranteed wage employment in a year to every household, and an adult member volunteer who can do unskilled manual work all suicides families in all village. The Gram Panchayat under the supervision of the Sarpanch carries out the registration of households at the village level. A wage seeker and his family members can register under this scheme by submitting an application at the Gram Panchayat. A register maintained there is sent to the Mandal Control Centre (MCC) to enter information regarding the wage seeking household. The MCC allocates a job card ID. A household job card is generated for each wage seeker and handed over to the Gram Panchayat. The Gram Panchayat fills up the job card, affixes the photograph of the household head, and attests the same before handing it over to the household. All transactions are entered electronically on computers and a pay slip is generated for every 14 days.

Sanction of pension:

These schemes help vulnerable groups like the aged, disabled and widows (provided to families following the sudden death of an earning member aged between 35 and 45). Beneficiaries receive Rs.200 per month. Out of the 129 farmer's suicides only 119 farmer families are received pension per month Rs.500.

Free electricity:

Farmers were given free electricity by the Congress-led government which took office in May 2004, as part of its election manifesto promising power for irrigation. The free electricity scheme was a response to reports that farmers were committing suicide because of crop failures triggered by water shortage. This government decision seems to have put tremendous pressure on the state's electricity distribution system with a significant increase in the number of illegal connections. In my field study noticed that low power supply, including erratic supply, supply for too few hours at night, irregular voltage with high fluctuations causing transformers to burn. There were also numerous requests to regularize the new connections which have come up since the free power policy was announced.

7.10: Summing up:

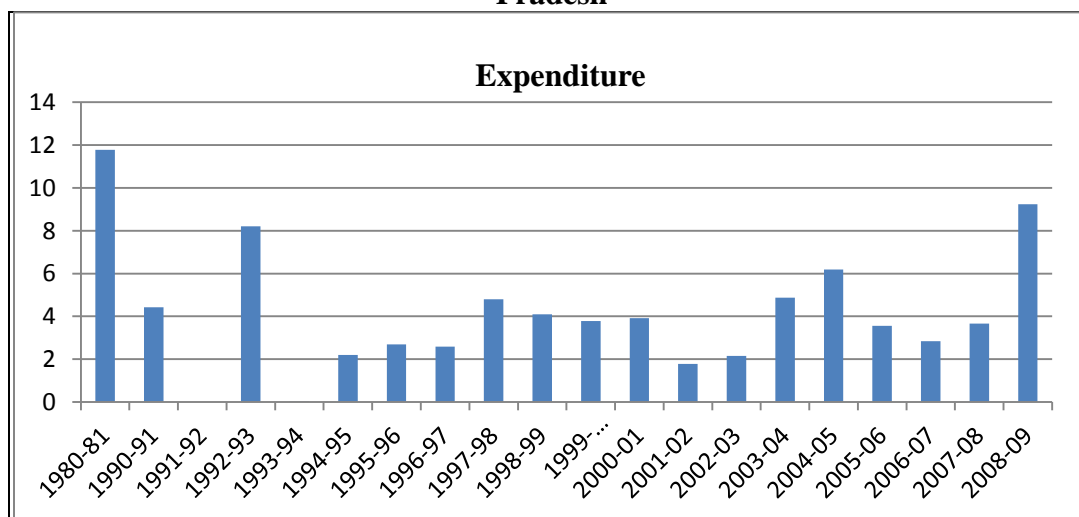
In all, the foregoing analysis of the macroeconomic policies towards agriculture during the post reforms period revealed the changed nature of the policies that have the concordant negative impact on Andhra Pradesh agriculture. It also has the positive correlation of significantly higher degree with the farmers' suicides in Andhra Pradesh.

Table.7.1
Plan wise Expenditure on Agriculture and Allied Activates in Andhra Pradesh.

Years	Expenditure on Agriculture and allied activates	(%)	Total expenditure
1980-81	-	11.78	-
1990-91	5640.97	4.42	167430.5
1991-92	5763.66	2.41	236403.9
1992-93	6473.92	8.2	286746.1
1993-94	5380.31	0.03	245346.8
1994-95	5380.31	2.19	245346.8
1995-96	7719.50	2.69	286937.9
1996-97	10954.85	2.59	305226
1997-98	17853.01	4.8	370724
1998-99	20495.58	4.1	497197.4
1999-00	16473.04	3.78	435460.2
2000-01	26271.64	3.91	671711.5
2001-02	14134.04	1.77	796894.8
2002-03	17889.82	2.15	831508.5
2003-04	46512.14	4.88	953784.1
2004-05	71268.33	6.19	1140733
2005-06	47791.26	3.56	1343941
2006-07	51579.91	2.83	1820698
2007-08	99403.85	3.66	2717080
2008-09	286722.18	9.23	3101819

Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), Govt. of A.P. Hyd.

Graph 7.1: Plan wise Expenditure on Agriculture and Allied activates in Andhra Pradesh



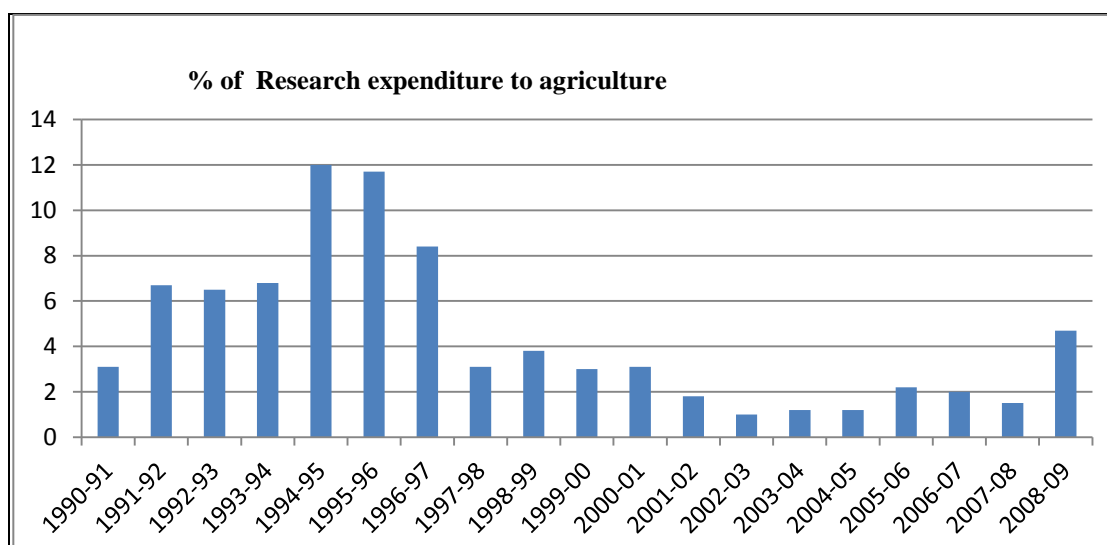
Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), government of Andhra Pradesh, Hyderabad

**Table.7.2: Plan wise Expenditure on Agriculture Research
And Extinction in Andhra Pradesh**

Years	% Research to Agriculture	% Extension to agriculture
1990-91	3.1	4.9
1991-92	6.7	3.2
1992-93	6.5	2.2
1993-94	6.8	2.1
1994-95	12	2.1
1995-96	11.7	2.4
1996-97	8.4	2.4
1997-98	3.1	3.6
1998-99	3.8	4.6
1999-00	3	2
2000-01	3.1	3.8
2001-02	1.8	1.9
2002-03	1	4.6
2003-04	1.2	6.1
2004-05	1.2	6.1
2005-06	2.2	-
2006-07	2.0	-
2007-08	1.5	-
2008-09	4.7	-

Source: Directorate of Economics and Statistics:
Statistical Abstract of Andhra Pradesh (compiled
for various years), Govt. of A. P., Hyd.

Graph: 7.2: Plan wise expenditure on agriculture research in Andhra Pradesh

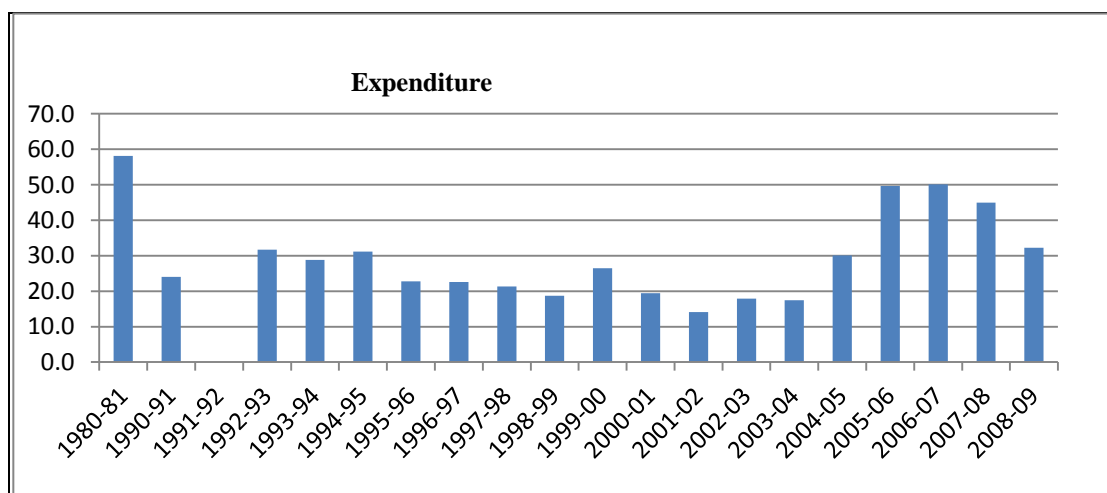


Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh
(compiled for various years), government of Andhra Pradesh, Hyderabad

Table.7.3: Plan wise expenditure on irrigation and flood control activates in Andhra Pradesh

Years	Expenditure on irrigation and flood control	%	Total Expenditure
1980-81		58.1	
1990-91	38399.04	24.0	167430.5
1991-92	53977.00		236403.9
1992-93	82505.95	31.7	286746.1
1993-94	76328.45	28.8	245346.8
1994-95	76328.45	31.1	245346.8
1995-96	65249.54	22.7	286937.9
1996-97	68951.01	22.6	305226
1997-98	79574.93	21.3	370724
1998-99	93148.85	18.7	497197.4
1999-00	115314.13	26.5	435460.2
2000-01	130513.26	19.4	671711.5
2001-02	112568.26	14.1	796894.8
2002-03	148699.59	17.9	831508.5
2003-04	166081.18	17.4	953784.1
2004-05	343635.25	30.1	1140733
2005-06	667205.30	49.6	1343941
2006-07	912607.77	50.1	1820698
2007-08	1221595.89	45.0	2717080
2008-09	1001804.45	32.3	3101819

Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), Govt. of A.P., Hyd.

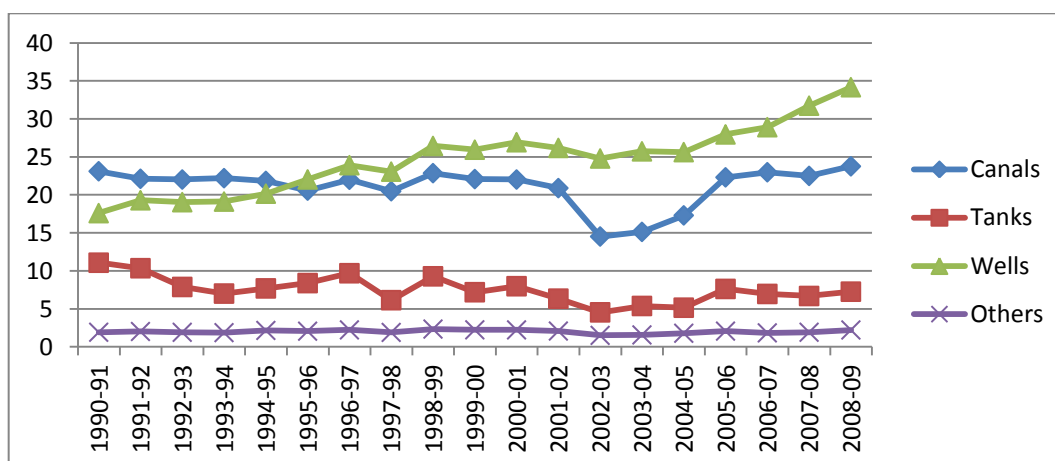
Graph: 7.3: Plan wise expenditure on irrigation and flood control activates in Andhra Pradesh.

Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), government of Andhra Pradesh, Hyderabad

Table: 7.4: Distribution of gross irrigated area under different sources of irrigation in Andhra Pradesh

Year	Canals	Tanks	Wells	Others	Total
1990-91	23.11	11.07	17.6	1.92	53.70
1991-92	22.12	10.35	19.29	2.02	53.78
1992-93	22.02	7.88	19.04	1.91	50.85
1993-94	22.20	7.01	19.12	1.87	50.20
1994-95	21.84	7.69	20.16	2.16	51.85
1995-96	20.56	8.39	22.03	2.06	53.04
1996-97	21.99	9.69	23.91	2.23	57.82
1997-98	20.48	6.14	23.06	1.9	51.58
1998-99	22.86	9.28	26.44	2.34	60.92
1999-00	22.08	7.19	25.95	2.24	57.46
2000-01	22.02	7.98	26.93	2.23	59.16
2001-02	20.89	6.34	26.18	2.08	55.49
2002-03	14.52	4.54	24.79	1.51	45.36
2003-04	15.13	5.38	25.73	1.57	47.81
2004-05	17.3	5.15	25.63	1.79	49.87
2005-06	22.31	7.62	27.96	2.07	59.96
2006-07	22.98	6.96	28.91	1.84	60.69
2007-08	22.5	6.69	31.74	1.92	62.85
2008-09	23.76	7.26	34.17	2.22	67.41

Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), government of Andhra Pradesh, Hyderabad

Graph: 7.4: Distribution of gross irrigated area under different sources of irrigation in Andhra Pradesh

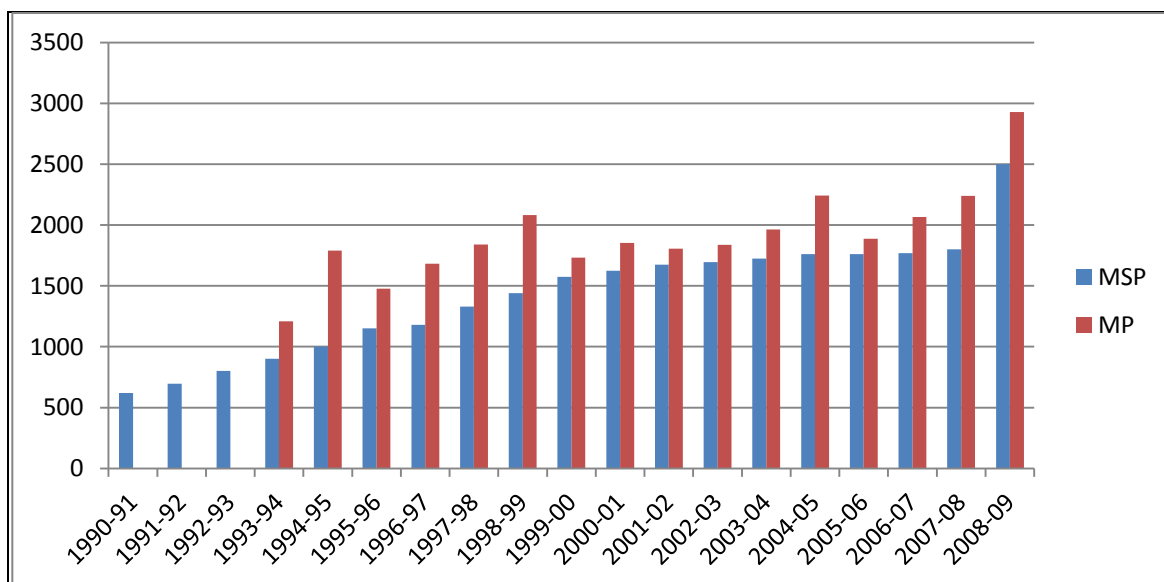
Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), government of Andhra Pradesh, Hyderabad

Table: 7.5: Minimum Support Price and Market Price for Major Agriculture Commodities, Andhra Pradesh.

Years	Cotton		Chilies	Groundnut	
	Minimum Support price (Rs .per quintal)	Market price	Market price	Minimum Support price (Rs .per quintal)	Market price
1990-91	620	NA	NA	580	NA
1991-92	695	NA	NA	645	NA
1992-93	800	NA	NA	750	NA
1993-94	900	1210	1762	800	978
1994-95	1000	1791	3113	860	905
1995-96	1150	1477	3184	900	904
1996-97	1180	1681	2802	920	1334
1997-98	1330	1841	3113	980	1201
1998-99	1440	2082	3986	1040	1305
1999-00	1575	1732	3534	1155	1341
2000-01	1625	1852	2941	1220	1366
2001-02	1675	1805	2895	1340	1367
2002-03	1695	1836	3233	1355	1455
2003-04	1725	1964	2441	1400	1791
2004-05	1760	2241	3040	1500	1798
2005-06	1760	1887	2592	1520	1757
2006-07	1770	2065	5375	1520	1849
2007-08	1800	2239	4742	1550	2338
2008-09	2500	2927	5437	2100	2460

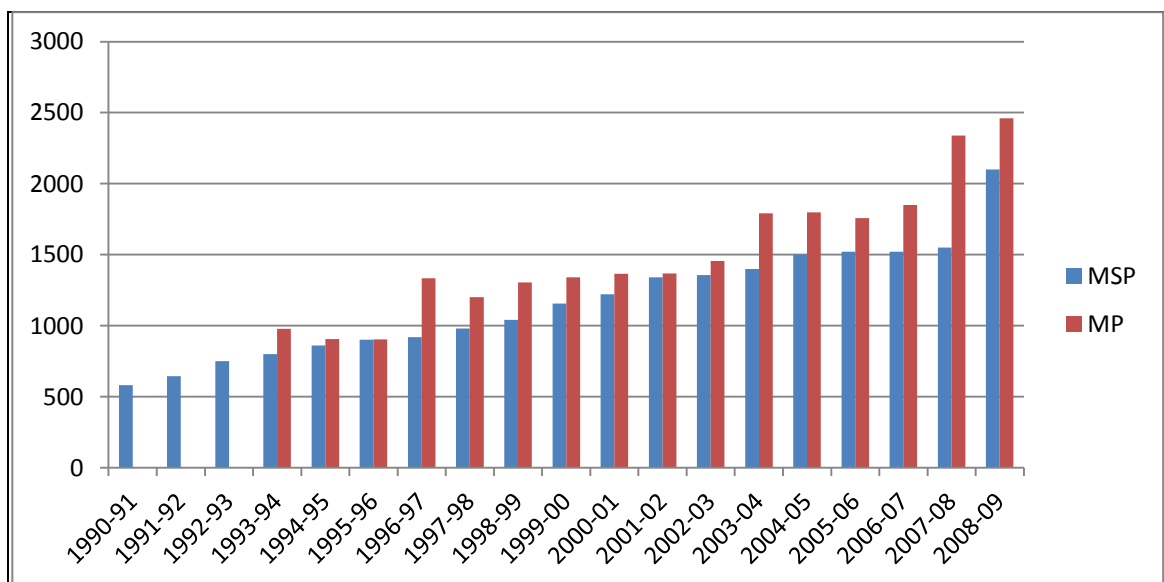
Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), government of Andhra Pradesh, Hyderabad; Director of Economics and Statistics.

Graph: 7.5: Minimum Support Price and Market Price for cotton crop in Andhra Pradesh.



Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), government of Andhra Pradesh, Hyderabad; Directorate of Economics and Statistics.

Graph: 7.6: Minimum Support Price and Market Price for groundnut crop in Andhra Pradesh.



Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), government of Andhra Pradesh, Hyderabad; Directorate of Economics and Statistics.

Table: 7.6: Disbursement of Agricultural Credit in Andhra Pradesh

Year	Type of Loan	Commercial Bank	RRBs	Co-operative bank
1992-93	Crop loan	46.2	12.3	41.4
	Agriculture Term	40.4	7.2	52.4
	Total Loans	44.7	11	44.3
1993-94	Crop loan	48.7	12.4	38.9
	Agriculture Term	54	5.4	40.6
	Total Loans	50.2	10.5	39.4
1994-95	Crop loan	50.5	13.1	36.4
	Agriculture Term	53.9	6.3	39.7
	Total Loans	51.2	11.7	37.1
1995-96	Crop loan	51.9	12	36
	Agriculture Term	50.9	7.8	41.3
	Total Loans	51.7	11.1	37.2
1996-97	Crop	50.5	11.2	38.3
	Agriculture Term	42.8	6.8	50.5
	Total Loans	49	10.3	40.7
1997-98	Crop loan	54.3	12.5	33.2
	Agriculture Term	40.7	6.1	53.2
	Total Loans	51.6	11.2	37.2
1998-99	Crop	54.4	12.2	33.4
	Agriculture Term	47.1	5.1	47.8
	Total Loans	53.2	11	35.8
1999-00	Crop loan	56.2	11.5	32.2
	Agriculture Term	48.2	6.4	45.4
	Total Loans	54.8	10.7	34.5
2000-01	Crop loan	52	13.4	34.6
	Agriculture Term	56	9.1	34.9
	Total Loans	52.7	12.7	34.7
2001-02	Crop loan	53.3	15.7	31
	Agriculture Term	56.3	11.8	31.9
	Total Loans	53.8	15.1	31.1
2002-03	Crop loan	50.4	14.4	35.2
	Agriculture Term	55.9	13.0	31.2
	Total Loans	49.9	13.9	36.2
2003-04	Crop loan	55.9	12.9	31.2
	Agriculture Term	55.9	13.0	31.2
	Total Loans	55.9	13.0	31.2
2004-05	Crop loan	62.2	19.0	18.8
	Agriculture Term	73.6	22.1	4.3
	Total Loans	65.0	19.7	15.2
2005-06	Crop loan	60.3	18.7	21.0
	Agriculture Term	75.5	12.3	12.3

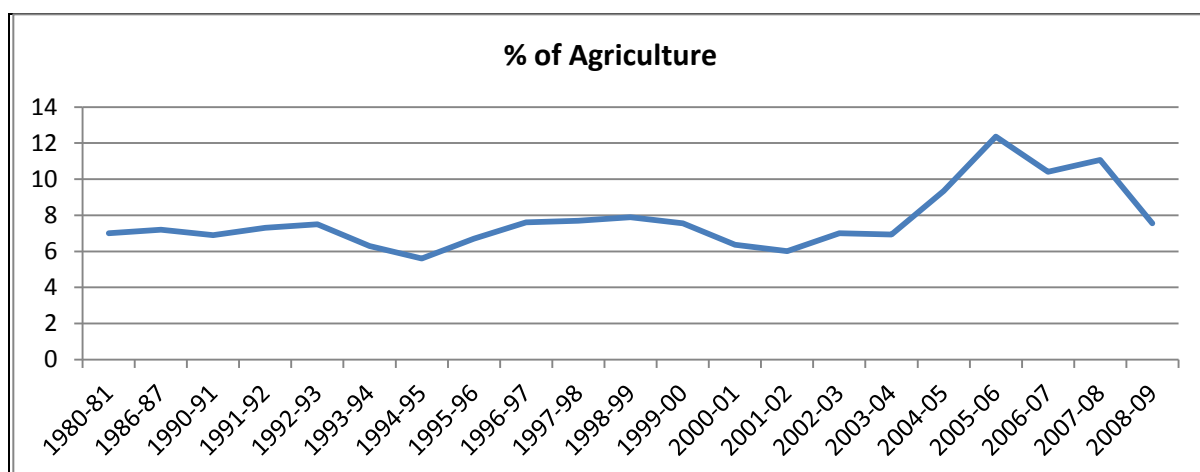
	Total Loans	62.8	17.6	19.6
2006-07	Crop loan	61.7	17.2	21.2
	Agriculture Term	61.6	17.2	21.2
	Total Loans	61.6	17.2	21.2
2007-08	Crop loan	63.5	16.8	19.7
	Agriculture Term	63.6	16.7	19.7
	Total Loans	63.5	16.8	19.7
2008-09	Crop loan	62.5	17.5	19.9
	Agriculture Term	71.2	14.3	14.6
	Total Loans	63.8	17.1	19.1

Source: Socio-Economic survey in Andhra Pradesh various years (1992-2009)

Table: 7.7: Agriculture Gross Capital Formation in Andhra Pradesh

Year	% of Agriculture	GCF in AP
1980-81	7	-
1986-87	7.2	-
1990-91	6.9	743650
1991-92	7.3	841667
1992-93	7.5	1039144
1993-94	6.3	13639
1994-95	5.6	14323
1995-96	6.7	17139
1996-97	7.6	19810
1997-98	7.7	20664
1998-99	7.9	21488
1999-00	7.55	221156
2000-01	6.36	199484
2001-02	6.01	208263
2002-03	7.00	243383
2003-04	6.94	282247
2004-05	9.34	453417
2005-06	12.37	804133
2006-07	10.41	837065
2007-08	11.06	1078405
2008-09	7.55	221156

Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), government of Andhra Pradesh, Hyderabad.

Graph: 7.7: Agricultural Capital Formation in Andhra Pradesh

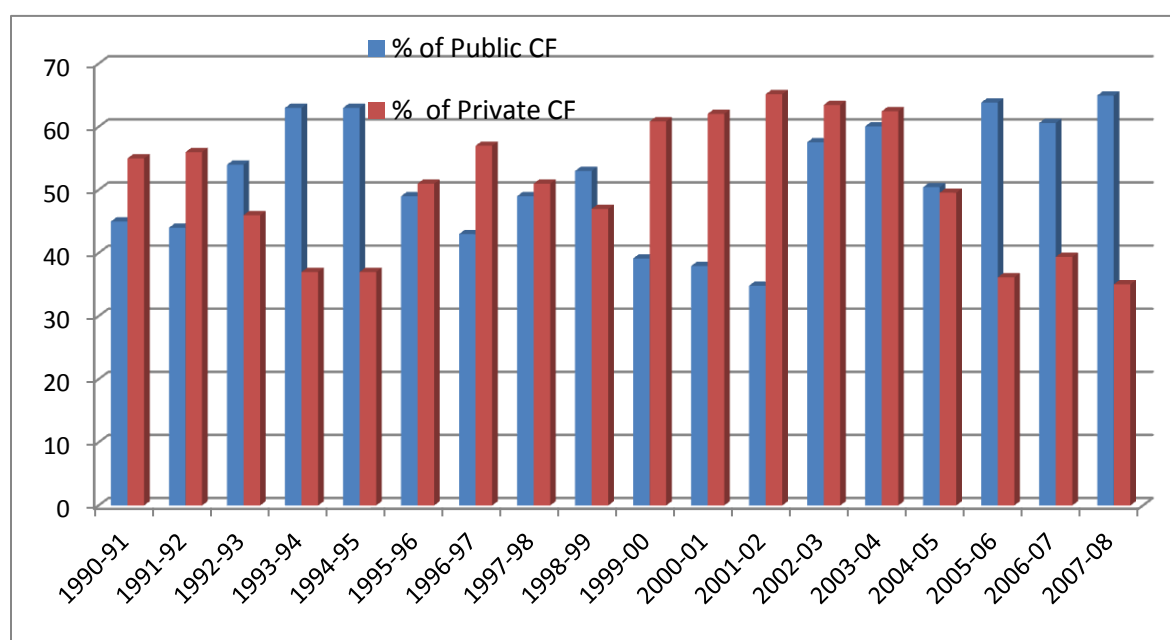
Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), government of Andhra Pradesh, Hyderabad; Director of Economics and Statistics.

Table 8.8: The share of Agricultural Capital Formation among Private and Public in Andhra Pradesh.

Year	% of Public CF	% of Private CF
1990-91	45	55
1991-92	44	56
1992-93	54	46
1993-94	63	37
1994-95	63	37
1995-96	49	51
1996-97	43	57
1997-98	49	51
1998-99	53	47
1999-00	39	60
2000-01	37	62
2001-02	34	65
2002-03	57	63
2003-04	60	62
2004-05	50	49
2005-06	63	36
2006-07	60	39
2007-08	64	35

Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), government of Andhra Pradesh, Hyderabad; Directorate of Economics and Statistics.

Graph: 8.8: The Share of Agricultural Capital Formation among Private and Public in Andhra Pradesh.



Source: Directorate of Economics and Statistics: Statistical Abstract of Andhra Pradesh (compiled for various years), government of Andhra Pradesh, Hyderabad; Directorate of Economics and Statistics.

Table: 9.9: Selected families of ex-gratia in selected districts.

Program	Ananthapur		Warangal		Guntur	
	Received	Not Received	Received	Not Received	Received	Not Received
ex-gratia	55	5	32	6	25	6

Source: Filed survey during 2010-2011.

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CHAPTER-VIII

SUMMARY AND CONCLUSIONS

In recent years, a larger agrarian crisis, particularly in commercial growing crops regions of Andhra Pradesh, Karnataka, Maharashtra, Punjab and Kerala in India, has precipitated a spate of suicide death among farmers. This is true even within Andhra Pradesh where the incidence of suicides was high in the regions of Telangana, Rayalaseema and uplands of Coastal Andhra. However the intensity of suicides differs across regions. It is with this concern that the current study looked into various socio-economic aspects to understand processes and identify risk factors which would help formulate policy suggestions.

Problem of Study:

In general, the farmers' suicides are associated only with cotton growers, because of crop failure for the past two decades. Nevertheless, the fact is that the crisis is not only limited to cotton growers but also applies to other commercial crop growers such as chilly and groundnut. At the outset if one were to fathom the crisis, he or she is lost. For the simple reason that the factors contributing to such a crisis are too many and too little attention is paid. Hence, such factors are being accumulated over the period. Therefore, this research attempts to comprehend the problems faced by farming community in the selected districts of Andhra Pradesh. The study tries its best to focus on the issues such as, factors underlying farmer's suicides in Andhra Pradesh with references to selected districts in the three regions. Having gathered required and sufficient information, a comparative analysis of inter-district and intra-district causes for farmers' suicides in three regions of Andhra Pradesh was carried out systematically. Also an attempt was made to provide contrasting and comparative analysis of non-suicide cases in Andhra Pradesh. Further, the research also reviewed critically various government policies and programs implemented to resolve this crisis. As a conclusion, the research study envisaged to develop and suggest alternative farmer friendly sustainable policy framework for implementation at administrative and peasant level.

Objectives of Study:

Given the elucidation of the background in this chapter/section, the broader objective of the research is to find out the causes of the suicides among the farmers in the current agrarian distress of Andhra Pradesh. The specific objectives of the research are as follows

1. To study the overall situation of Andhra Pradesh agriculture and farmers in terms of Landholding Position and Cropping Pattern with a view to link them to suicide deaths.
2. To examine the magnitudes, trends and spatial patterns of farmers' suicides in India and Andhra Pradesh.
3. To unearth the factors underlying farmer's suicides in Andhra Pradesh with reference to selected districts in the three regions; and compare and analyze inter-district and intra-district causes of farmers' suicides in the three regions; and also provide a comparative analysis of suicides with non-suicides in Andhra Pradesh.
4. To review critically various government policies framed and implemented to resolve this crisis and eventually to develop and suggest alternative policy framework that is farmer friendly and easily implementable at the administrative and peasant level.

Hypothesis:

1. Low productivity and production during the post reform period also influence the farmers' suicides.
2. Oppressive and exploitative socio-economic factors that are forced the farmers to committed suicides among all selected districts.

Sources of Data and Methodology:

Selection of the Districts:

Three districts like Guntur district from Coastal region, Warangal district from Telangana region, Anantapur district from Rayalaseema region have been selected for this study based on high number of suicides occurred. These three districts will also cover all the political sub-regions of Andhra Pradesh based on the reported cases of suicides. Moreover, we can also provide space for regional factors. We hope to collect the regional level factors, which prompted farmers to suicides. Specific villages were selected based on the list of suicides cases from 2007 to 2009 provided by the Government of Andhra Pradesh.

Collection of Data:

Collection of data was held in the selected villages. To provide objectivity and authenticity we tried to have data from the primary as well as the secondary sources. Primary sources were generated from the field and the affected farmers' families, while the secondary sources were drawn from the available documents. The main sources of secondary data are as follows: Census of India, 2001, National Crime Records Bureau, National Sample Survey, Bureau of Economic and Statistical, Andhra Pradesh, Statistical abstracts of Andhra Pradesh, Revenue Department, Government of Andhra Pradesh and News paper reports on farmers suicides.

From the above sources, required information was gathered. Having gathered required information, a macro context was developed which was attributed to Andhra Pradesh. We tried to identify the level of drought proneness in various regions of Andhra Pradesh, and examined the trends in overall suicides rates vis-à-vis farmers' suicides rates. This information was helpful to us to draw a representative sample from the selected suicides cases for generating primary data.

Primary data for the study was collected from in-depth study of three district of Andhra Pradesh. The primary data mainly was generated by means of scientific

questionnaire, which was carefully designed, and standardized. The questionnaire has: Interview schedule for close kin of the suicide victim.

For evaluating the specific objectives of the study, necessary primary data was obtained from the 129 selected families where suicides occurred during 2007 to 2009 from 125 villages of three regions of Andhra Pradesh, through personal interviews with the help of a well-structured schedule. We confined to the collection of data pertaining to the 2010-2011 agricultural year. The data collected from the respondents includes general information about suicide farmers, their resource position, land holding, cropping pattern, debt condition, asset position, sources of credit, purpose of credit, mental status of person, addictions, if any, reasons for suicide and any other information family wishes to share. Further, the study also provided comparison of farmers' suicides with non- suicides in Andhra Pradesh. We identified if at all there were to exist some non- suicides households that are similar to the suicides families in the village in term of landholdings and other assets. This particular information was obtained from the village sarpanch, village revenue officers and elders of the village. For an objective analysis, we also used data collected from 87 non-suicide families from 87 villages. The entire suicides could be classified into five set of households based on their landholding size.

1. **Household Set.1:** Marginal farmers are those who have landholding of less than one hectares.
2. **Household Set.2:** Small farmers are defined as above one hector but below two hectares.
3. **Household Set.3:** Semi-medium farmers are above two hectares but below 4 hectares
4. **Household Set.4:** Medium farmers are above 4 hectare but below 8 hectares.
5. **Household Set.5:** Large farmers are 8 hectares and above.

Again, the farmers are classified based on ownership into the following categories:

1. Pure tenant
2. Pure owner
3. Owner cum tenant

Tools and Techniques

The collected data was tabulated and consequently simple percentage and average was calculated to get the result. To measure the inequalities in the distribution of landed property among different households irrespective of Gini's coefficient ratio was also calculated.

$$C = 1 \left[\sum (P_t - P_{t-1}) (Q_t + Q_{t-1}) \right]$$

Where, C = Gini's coefficient of concentration

P_t and Q_t are Cumulative proportions of number of operational holdings and are operated up to the J^{th} size class of holdings, and

\sum denotes summation over the size classes

In order to observe the performance of agriculture at regional/state level growth rates were computed according to the following formula,

$$\begin{aligned} P_t &= P_0(1+r)^n \Rightarrow P_t/P_0 = (1+r)^n \\ 1+r &= (P_t/P_0)^{1/n} \\ r &= [(P_t/P_0)^{1/n} - 1] \end{aligned}$$

Where P_t = Current year value

P_0 = Initial year value

r = Compound growth rate

n = Number of years

To measure the instability variations of selected crop, we first computed average annual percentages, changes in crop output, productivity and area, and then estimated standard deviation in such changes.

Primary Data:

Logistic Model

Logistic regression model was used to examine the influence of different factors, namely, size of the landholding (SL), Family size (SF), Total indebtedness (TI), Total expenditure (TE), per hectore expenditure (PHE), Value of livestock in rupees (LSV).. The influence of various socio-economic factors on the probability of incidence of suicide was investigated through LOGIT Model. The dependent variable (probability of incidence of suicide) was expected to lie between 0 and 1.00. In the present study suicide farmers and non-suicide farmers made the dependent variable discrete. Thus, the multivariate Logit model was useful for the analysis. The logit model assumes that the probability of an individual, i , being committed suicide has the form as:

$$P_i = P(Y_i = 1/X_i) = e^{X_i\beta} / (1 + e^{X_i\beta}) \quad (1)$$

Where X_i is the set of explanatory variables that include individual characteristics and β is the set of unknown parameters. Similarly, the probability of an individual not committing suicide as:

$$1 - P_i = P(Y_i = 0/X_i) = \frac{1}{(1+e^{X_i\beta})} \quad (2)$$

Taking the ratio of the two expressions we get

$$\frac{P(Y_i=1)}{P(Y_i=0)} = e^{X_i\beta} \quad (3)$$

Taking the natural log of both sides we get the equation as:

$$\ln \left[\frac{P_i}{(1-P_i)} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \dots \dots \dots + \beta_n X_n \quad (4)$$

The logit model guarantees probabilities in the range of (0, 1).

The specific Logit model to predict the odds of a suicides farmer is specified as follows:

$$\ln \left[\frac{P_i}{(1-P_i)} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + u_i \quad (5)$$

Where,

\ln = Natural logarithm

P_i = Probability that the i th farmer will be a farmer who committed suicide

$1 - P_i$ = Probability that the i th farmer will not commit suicide

X_1 : size of the landholding (SL)

X_2 : Family size (SF)

X_3 : Total indebtedness (TI)

X_4 : Total expenditure (TE)

X_5 : per hector expenditure (PHE)

X_6 : Value of livestock in rupees (LSV)

b_1 to b_6 : are the coefficients of the six independent variables.

U is error term

Chapterisation:

The first chapter describes the Objectives and Scope of the study, providing a brief review of agrarian trends in the state and across three regions of the Andhra Pradesh. It raises certain concerns and issues in the context of deteriorating agrarian conditions in the state. It also presents in short the analytical method employed and the purpose and objective of the study. The second chapter deals with a critical and detailed review of literature. It has two parts. The first part explains macro dimensions of agrarian crisis and the second part deals with micro dimensions of agrarian crisis, viz., farmers' suicides and their implications. The third chapter highlights the salient features of agriculture in the state. It provides accordingly the trends and real analysis of landholding, cropping pattern in the three regions of Andhra Pradesh. The fourth chapter explores the trends in farmers' suicides in India and Andhra Pradesh. It indicates particularly a break point in year 2005, which is different from that of India. The fifth chapter presents a detailed analysis of three districts, chosen one each from Andhra, Rayalaseema, and Telangana regions respectively. The detailed analysis comprises landholding patterns, cropping pattern

and the resultant suicides intensities, distinct from one district to another. The sixth chapter identifies the reasons for farmers' suicides from selected three districts. It presents comparative analysis of inter-district and intra-district causes for farmers suicides in three regions of Andhra Pradesh. Further, a comparative analysis of the suicides with non-suicides in Andhra Pradesh too finds a place in the sixth chapter. The seventh chapter reviews critically various government policies implemented to resolve this crisis. It unearths the defects and drawbacks which are found in the policies. The eighth chapter summarizes and concludes with an alternative policy framework which is farmer friendly and easily implementable at administrative and peasant level. It is also sustainable.

Main Findings of the study:

The Agrarian Scenario:

In Andhra Pradesh, during post reform period the growth rates of production have either declined or registered negative trends for crops like Rice (1.45), Cereals (2.39), Food-grains (2.4), Groundnut (-3.75), Oil seed (-1.04), Cotton (4.2) and Chillies (5.66) in comparison to the pre-reform period. Here, it is worth noting to know that Rice, Cereals, Food-grains, Groundnut have experienced low yields leading to poor or low growth rates in production whereas Oilseeds, Cotton and Chillies have experienced low rate of growth due to low in both area and yield which has resulted in low growth rate of production. One of the significant features in the cropping pattern is the rise in area, yield and production of Maize particularly in Andhra Pradesh. Such obvious feature is due to the systematic supply of Maize Seeds and Fertilizers at subsidiary rate. Such farmer friendly measure not only encouraged them to cultivate Maize but also persuaded them to bring down the area under Chillies. The Region wise findings presented below give an overall pattern:

In North Costal Andhra Region, during post-reform period, it is worth noting to know that Rice, Cereals, Pulses, Groundnut and Chillies have experienced area led growth rates. Another captivating inference from the study is that the North Costal Andhra Region has registered declining trends in the area under crops production and

yield per hectore in the first and second sub-periods. However, the third sub-period has recorded positive increasing trend. More specifically the growth rates of Rice, Maize and Cotton have been amplified in the third sub-period in spite of a fall in the growth rates of Food-grains together. Perhaps this could be attributed to the irrigation of Rice and Maize under wells. Nonetheless, the growth rates of Groundnut, Pulses and Oilseed crops have recorded down trend due to unsure means of cultivation, which is an obvious indication of the agricultural backwardness of North Costal Andhra Pradesh. When it comes to pre and post-reform period, the growth rates of production have chronicled down trend.

It is also noticed that in South Costal Andhra region, a fall in the area under crops has resulted in the decline of the crops production during post-reform period compared to the pre-reform period. The fall in area and productivity has also reflected in the fall of production. Cotton is the most cultivated crop in this region, its yield growth rate is 2.66 percent in the pre-reform period, however has come down to 1.92 percent in the post-reform period. Such low productivity is not only due to poor irrigation facilities but also due to excessive usage of fertilizers and pesticides. From this, one could infer that in South Costal Andhra Region in spite of highly assured water sources there is significant distribution across the Region with regard to growth rate. Added to this the unhealthy governmental agriculture polices have rubbed the salt on the wounds of limping farmers and thus has galvanized farmers' suicides in this Region.

We observe from the analysis that in the drought prone Rayalaseema Region dry land cultivation of the crops like Groundnut, Cotton and Pulses have seen the negative growth rates in area, production and yield due to drought that has depleted the groundnut water source in the Kurnool and Chittoor districts. Under the Canal and Well irrigation in Chittoor district Maize could replace Rice crop. Oilseeds production has recorded a negative growth rates in the pre and post reform period due to severe drought conditions that have scuttled the production of Groundnut in Anantapur district, which is a principal and leading crop in the district and in the whole of Andhra Pradesh state. This calls for immediate governmental remedial

measures and long-standing interventions to sustain dry land agriculture in Rayalaseema Region.

It is found that in north Telangana region, the growth rates of area, production and yield of Maize, Cereals and Food-grains have impressive increasing rates during the post reform period thanks to the growth rate of yield per hectare is marginally positive for all these crops. The important feature of agriculture in North Telangana Region is the penetration of Maize crop into several other minor crops and visible domination. Area under Cotton has noticeably increased during 1990-2000 because of the profitability and commercial appeal of Cotton crop therefore farmers have willingly spared more area for this crop. All of a sudden, farmers have been weighed down by the cost of cultivation, as if it were not enough unfortunate down trend in production and yield not only have left the farmers with loss but also gleefully stared at them with unbearable financial crisis hence, most of the Cotton growers resorted to suicides.

In south Telangana Region, the low growth rates in production during post reform period are due to low growth rates of area in the case of Rice, Cereals and Groundnut in case of Cotton, Chillies and Oilseeds it is attributed to low growth rates of area and yields. Nevertheless encouraging growth rates of area, production and yield have been discovered in case of Maize, and Pulses in the South Telangana Region. Such positive developments in the crop pattern could be associated to assured water sources through lift irrigation facilities and low cost cultivation with high profits. These trends have been detected in Mahabubnagar district very specially. Largely in the South Telangana districts, low cost commercial crops like Maize and Pulses have made inroads into other traditional crops and have become farmers' deliberate choices. Surprisingly in Khammam and Nalgonda districts, we see a marginal increase in the yield rates of Food-grains, which could be linked to the sustenance of Rice crop under relatively more assured sources of irrigation like canals and tube wells.

Trends in Farmers Suicides in India and Andhra Pradesh:

Extensive and exhaustive study and analysis of the problem of farmers' suicides reveals that the farmers' suicides are all pervasive in the country and state of Andhra Pradesh with varied degrees of intensity. It is worth noting that the acute issue is confined to only some particularly States in the context of Country or Regions in case of States. Maharashtra, Karnataka, Andhra Pradesh, Chhattisgarh and Madhya Pradesh can be called Group I States, where this problem is very intense and acute. Another interesting finding is that this phenomenon is very prevalent in dry, semi-arid, poor and backward Regions within these contiguous States. The very same problem is very acute and severe in the central part of India too.

In Andhra Pradesh backward Regions like Rayalaseema, Telangana and some parts of Coastal Andhra like North Coastal districts the problem is very severe. The number and rate of farmers' suicides are very high and unfortunately they are increasing rapidly. The phenomenon of farmers' suicides in Andhra Pradesh seems to be divergent from the suicides in general.

Micro analysis:

The study found that in the Guntur district, the rate of involvement of female farmers in agriculture is very less in comparison to other districts of Andhra Pradesh. Poverty is one of the reasons why female farmers have directly involved in Anantapur and Warangal districts. It is a matter of concern and an issue for the Psychologists and Sociologists to go into the root cause of the farmers' suicides since nearly 2/3 of the suicides are from the age group between 30 and 50, a prime and highly productive age from all respects. In all the three districts, majority of farmers who committed suicides are married. Most of them happen to be illiterates. Good many are new to agriculture with less than five years of experience. Among the three selected districts if one were to look for the statistics based on experience, Ananthapur stands out with high number of inexperienced farmers who committed suicides followed by Guntur and Warangal respectively. Most of these farmers were agricultural labourers earlier and now tenants.

Among the selected landholders, large farmers are not found in Guntur and Warangal. While the small farmers are considerable in all the three selected districts, in Ananthapur alone we find large proportion of semi-medium farmers (54.3 percent) and comparatively very less in Warangal and Guntur. Average size of marginal holding in Ananthapur district is highest due to the dry land owned by them compared to combination of dry and wet land owned by marginal farmers in Guntur and Warangal districts. The distinct feature of Warangal district is the absence of medium and large farmers in the selected sample households.

It is significant to note that pure tenant marginal and small farmers are not found in Ananthapur due to uncertainty in the agriculture operation and income from dry land. Pure tenant farmers are confined to semi-medium operators in Ananthapur district due to migration of landowner to the urban areas. Owners themselves largely in the district cultivate different sizes of landholding. While in Guntur district, different sizes of landholding are cultivated by owner-cum tenant. The peculiar feature of Guntur is cultivation of small, semi-medium and medium landholdings are not in the hands of the owners. The pure owner cultivation suicides are few. Only four suicides are noted and all are marginal farmers. In Warangal, marginal, small, semi-medium landholdings are cultivated by owners themselves.

In terms of tenancy, it is found that 75:25 tenancy contracts with fixed rent system are most unfavorable to the farmers. It is very vivid and clear in Guntur and Warangal Districts. It is very interesting to observe from the study stated facts that most of the pure tenant and owner cum tenant households in Guntur and Warangal districts are connected with this type of tennorial arrangement, which is more exploitative. Perhaps such tenancy contract is also an added reason for the farmers' suicides

It is observed that vast majority of farmers' suicides have occurred among OBCs. The same trend exists in all the three selected districts. OBC farm households with limited assistance and income seem to have ventured to borrow heavily to meet the higher cost of cultivation that resulted in accumulated debt burden hence large number of suicides. On the other hand, most of the SCs and STs are agriculture

labourers. They have low incomes and small portions of land. These farm households with limited assistance and low income have dared to borrow heavily to meet the higher cost of cultivation from money-lenders that resulted in torture and threat to life from money-lenders. "For instance, one of the SC farmers having 7 acres of dry land has two sons. The first son got married recently and second son is an auto driver. The head of house met with an accident. He could no more work in the field. Therefore, his first son took care of the entire field. For the groundnut cultivation, he borrowed Rs.50000 from institutional sources by mortgaging a part of the land. As if it were not enough to meet other family/social obligations on loan, he received Rs.2.5 lakhs rupees from non-banking financing institution (chit fund), micro finance institutions and village money-lenders at an exorbitant interest. After the harvesting of groundnuts, the trader came and took away the entire agricultural output and he did not give any money to the farmer in the name recovering loaned money. Other moneylenders, friends and micro finance institutions forced him to return the borrowed money. It was too much for the farmer to digest the fact. Under these circumstances, the first son got frustrated. He thought that ending life is the only solution to escape torture hence committed suicide. The second son having realized that the trader cheated his brother, decided to claim for money and demand for justice. He courageously confronted the trader and asked for remaining balance from trader. One night the trader hired the second son's auto services in the night about 8'o' clock, as the auto was reaching a secluded place, with the help of another trader cut off the head and threw it in the jungle. Separated torso was buried in the nearby place. It took several days to know the death news. Most of the suicides are under fear and pressure happened.

In the case of irrigation, data and observation, we know that only 23.5 per cent of area is under irrigation and 76.4 per cent area is under non-irrigation. It is true in case of categories of farmers' suicides households in all selected districts. In Guntur 88.6 per cent of area operated by different categories of suicides farm households is under irrigation in contrary to this only 6.4 per cent is under irrigation in Warangal district. In Anantapur district, the area under irrigation is 0.29 per cent, which is insignificant in appearance and nature. Guntur district area is under

irrigation while that of Anantapur and Warangal districts area under rain-fed category.

The study noticed that cotton cultivation under canal is only limited to Guntur district while the cotton cultivation under well is widespread in Warangal district. Chillies cultivation under canal is found only in Guntur district and a small proportion of land in Warangal district is under well irrigation. Similarly, 1/10 of the land owned by the selected farm households in Guntur district irrigate paddy crop under canal and equal area owned by selected farm households in Warangal district irrigate paddy under wells. Cultivation of cotton, chillies and paddy crops seem to have disappeared in Anantapur district. On the other hand, groundnut emerged as the principal crop in the district, of which 6.5 per cent is irrigated under well and nearly 90 per cent depends on rains. Other important change in the cropping pattern of Anantapur district is deliberate discontinuance of Sericulture a cash crop. Also good many turn to horticulture crops like sweet orange, because subsidies offered by government for raising sweet orange crop are so attractive and enticing. As days went by recurring droughts worsened the economic condition of sweet orange growers, they too have experienced economic slowdown and debts, which frustrated them to commit suicides. Therefore, in Anantapur district we come across suicides among commercial crops growers as well as horticulture growers.

The study reveals that most of the suicide farmers' households are from small farmers with Rs 15000 to 20000 annual income earnings. It is very true in the case of Ananthapur and Warangal districts. In Guntur district, small and semi-medium farmers committed suicides with Rs. 20000 to 25000 annual income earnings. If one were to total up the whole suicides percentage, it amounts to 71 percent. This amount consists of only small and semi-medium farmers groups. This trend is very prevalent in all the districts.

It is noticed that the large majority of suicide farmers had borrowed heavily from non-institutional sources at high rates of interest. On other hand only 10 to 15 percent of the loans raised by suicide farmers were from institutional sources. The amount of loans received by the small farmers and semi-medium farmers from the

institutional sources is around Rs.11000 and 28000 respectively. The study found that among all three districts more than 65 per cent of expenditure or utilization of borrowed loans put on non-productive purpose only. On the other hand, less than 35 percent of borrowed loans put on productive purpose only. The study noticed that crop failure and indebtedness are the main factors which lead the farmers to suicide in all the three districts of Andhra Pradesh.

Comparing suicide case and non-suicide control households, one observes that the former have slightly higher proportion of nucleus families, have a higher average family size, ownership of assets and access to basic amenities is lower, and more importantly the average amount of loan is much higher and the average value of produce is lower. A statistical exercise reiterates our observation that indebtedness and absence of bullock (a productive as well as a liquid asset) are significant risk factor.

Government Policies:

The study noticed that the macroeconomic policies towards agriculture during the post reforms period revealed the changed nature of the policies that have the concurring negative impact on Andhra Pradesh agriculture. It also has the positive correlation of significantly higher degree with the farmers' suicides in Andhra Pradesh.

Suggestions:

On the basis of the findings and conclusions given above, the following policy measures may be as appropriate measures for policy making to mitigate the distress among the farmers both at aggregate and disaggregate levels.

To sustain the family of the deceased, all the financial help should be provided as 'Fixed Deposit' in the bank, with quarterly payment of interest

The Insurance schemes are very much appropriate to the situation. The farmers' problem is rooted in his exposure to risk-yield as well as price shocks. Insurance schemes may be devised to mitigate these. This can be done in three

possible ways. Credit insurance can look into the credit default. A fund with contribution from the creditor, the debtor and the Government may be created for this. Appropriate mechanisms to look into its modus operandi should be devised. Crop insurance will be linked with yield risk. Implementation of this should be village and if possible plot of land specific. Theft of crop and loss due to fire or other calamities should be taken into consideration while administering this. The earlier mentioned information bureau could also help in this endeavor. Income insurance will address the poor returns, particularly for marginal and small farmers and also tenants. The poor returns could be because of poor prices, low yields or high transaction costs arising out of low quantity of produce. A risk mitigation fund can be generated to finance the three different insurance schemes-crop, credit and income—or any other appropriate risk mitigation scheme. This Fund will have contribution from the Government and can also be drawn from the Rural Infrastructure Development Fund (RIDF).

Non-farm employment opportunities in rural areas should be provided which save the farmers in the conditions of crop loss and other disaster situations.

Strongest action under Indian Penal Code should be taken against suppliers and manufactures of spurious pesticides. Likewise, the suppliers of spurious/inferior seeds must be punished. Seed supply must be maintained as a public good to protect farmers' rights.

Integrated Pest Management (IPM) should be popularized among farmers.

Institutionalized Credit System to the farmers must be simplified and Moneylenders charging the exorbitant rate of interest must be punished.

Gram Panchayats should evolve a mechanism to identify the indebted and suicides prone farmers and help them to overcome the crisis.

The role of commission agents, traders and intermediaries should be minimized to facilitate the farmers to fetch maximum price of their produce.

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