COMPARATIVE STUDY OF FARMER SUICIDES IN MAHARASHTRA AND GUJARAT

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ABHILASH KUMAR

CENTRE OF ECONOMIC STUDIES AND PLANNING
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI 110067
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CENTRE FOR ECONOMIC STUDIES & PLANNING
SCHOOL OF SOCIAL SCIENCES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI-110067, INDIA

DATE: 27.7.2007

DELCARATION

I declare that the dissertation entitled "COMPARATIVE STUDY OF FARMER SUICIDES IN MAHARASTRA AND GUJRAT" submitted by me is in partial fulfillment of the requirement for the award of the degree of MASTER OF PHILOSOPHY of this university is my original work. This work has not been previously submitted for any degree or diploma in this or any other university.

Abhilash Kumar

Abhilash Kumar

CERTIFICATE

It is recommended that this thesis may placed before the examiners for evaluation

Prof Pradipta Choudhary
CHAIRPERSON

CHAIRPERSON
Centre for Economic Studies & Planning
SSS/JNU/New Delhi-110067

Archana Aggarwal

Assist. Prof Archana Aggarwal
SUPERVISOR

SUPERVISOR
CESP/SSS/JNU

Phone : 91-11-26717676, 26717557 Ext. 4421/26704421 Cable : JAYENU Fax : 91-11-26717586, 26197603

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INTRODUCTION

CHAPTER 1

Introduction

Performance of the overall economy depends on the performance of the agriculture sector in the context of developing countries. Performance of Indian economy especially after liberalization contradicts above argument. In this period agriculture sector was experiencing deceleration as pointed out by mahendra dev[1] that agriculture growth slowed down to 2.7 percent in liberalization period as compare to 3.1 percent in previous decade but the economy was experiencing high growth rate after liberalization. And this process did not stop just to deceleration in agricultural sector because suicides started hitting the agricultural economy and this phenomenon changed the whole perspective, as the very base of Indian economy the agricultural sector is itself in need of cure. Prominent argument forwarded by the economists is, globalization of the economy itself is the cause behind this deceleration in agricultural sector. Kalirajan[2] argued that no major breakthrough in developing new high yielding varieties in 1990s and decline in quality of the soil are the main reasons behind this deceleration. But these points are purely technical and are not sufficient to explain why this happened only after liberalization of the economy.

India undertook a package of structural reforms and economic liberalization in 1991. The main aim of these policy changes was to integrate the Indian economy with the world economy. According to Renuka Mahadevan* (2003) globalization of agriculture could transform the nature of Indian agriculture of subsistence to commercialized agriculture and thus can improve the condition of rural community. But what globalization has done to Indian farmers, we can see in the increasing rate of suicides of farmers in various states that participated in this globalization enthusiastically.

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[1] Mahendra Dev, "Agriculture sector Employment and Social sector Neglected", EPW, April 5, 2003

[2] Kalirajan, K.P., G. Mythili and U. Sankar, Eds. 2001. Accelerating Growth Through Globalization of Indian Agriculture, Macmillan, India.

* Renuka Mahadevan, "productivity growth in Indian agriculture: The role of globalization and economic reform", Asia pacific development journal, Vol. 10, No.2, December 2003

With the macro-economic reforms, many of the controls were lifted; tariffs were drastically reduced particularly on capital goods. Although the protection to consumer goods industry continued, the level of protection significantly reduced and most of the items were freed from quantitative restrictions. Further, even though export subsidies were withdrawn, the steep devaluation of the rupee made exports of manufactured goods highly competitive and profitable. So if liberalization is the cause behind suicides by the farmers then it will be logical to look at the policies adopted prior and after liberalization of the economy. First we will go through the various findings at policy level by economists.

Renuka mahadevan[1] pointed out in her paper that in globalization that reduced the support to industrial sector was not the sufficient condition for movement of resources in agriculture and depreciation was not sufficient to increase agricultural exports from India. Investment in agriculture sector and agricultural export both experienced fall in liberalization period. According to Rimjhim M. Aggarwal[2] increased participation in external markets in globalization exposed the farmers to greater price risks and fraudulent by private traders, the shrinking role of the state reduced the farmers' ability to cope with these risks. The result was decline in average incomes of the resource poor farmers and rising level of indebtness, as cost of production grew sharply. Several economist have accepted that indebtness is the major problem in Indian agriculture.

At all-India level, estimated number of rural households was 147.90 million (SAS)[3], of whom 60.4 percent were farmer households. Out of these 89.35 million farmer households, 43.42 million (48.6 %) were reported to be indebted. Estimated prevalence of indebtedness among farmer household was highest in Andhra pradesh (82%). Estimated number of indebted farmer households was highest in Uttar pradesh (6.9 million), followed by Andhra pradesh (4.9 million) and Maharashtra (3.6 million). So if indebtness

[1] Renuka Mahadevan, "productivity growth in Indian agriculture: The role of globalization and economic reform", Asia pacific development journal, Vol. 10, No.2, December 2003
[2] Rimjhim M Aggarwal, "Resource poor farmers in India, On the margin or frontiers of globalization?" united nations university, Research paper no. 2006/97
[3] Situation Assessment Survey of Farmers in India (2003)

is concluded as the main cause of suicides farmers in India there should be high suicide rate in the states where prevalence of indebtness is high. But looking at the data provided by ministry of home affairs in accidental deaths and suicides in India we find that suicides are not taking place on this basis. So we have to go through all the possible factors behind this crisis in agriculture sector. Some of them are discussed below.

The proportion of marginal and smallholding has been on the rise. As marginal holdings become 69 percent in 2003 as compare to 59 percent in 1992 however marginal holdings were 54 percent in 1982 (NSS report)[1]. So in globalisation period there was a rise of 16.67 percent in marginal and small holdings while it increased by only 9 percent in 80s.

The share of agriculture in GDP came down drastically after globalisation while the proportion of people dependent on agriculture for their livelihood has remained the same. The growth rate of rural employment was around 0.5 per cent per annum between 1993-94 and 1999-00 as compared to 1.7 per cent per annum between 1983 and 1993-94. Total rural employment growth rate declined from 1.57 per cent per annum during 1977-87 to 1.15 per cent during 1987-99; rural non-agricultural employment growth rate declined from 4.32 per cent to 2.06 per cent; while agricultural employment growth rate remained around 1 per cent during the pre- and post-reform periods (1977-87 and 1987-99), (A Radhakrishna, 2003)[2]. S mahendra dev pointed out in his another paper that growth rate of credit for small and marginal farmers declined in the 1990s as compared with the 1980s. According to Sudhir J Mulji[3] pointed out that the ratio of capital formation in agriculture dropped from 14.27 percent in 1970 to 7.96 percent in 2000. A Radhakrishna pointed out that annual growth rate of public investment in agriculture fell down to 1.9 percent during 1990s as compare to 1980s (4.0) that slowed down expansion of irrigation. Annual growth rate of fertilizer use also declined from 7.8 percent in 1980 to 4.3 percent and area under high yielding varieties fell from 4.9 percent in 1980s to 2.8 percent in 1990s. The terms of trade for agriculture have improved that we can see in data

[1] NSS Report No. 491: Household Ownership Holdings in India, 2003 (January–December 2003)
[2] A Radhakrishna, "agricultural growth, employment and poverty", EPW
[3] Sudhir J Mulji, "Agriculture and employment", EPW, April 12, 2003

provided in CACP and there has been a record rise in agricultural exports. On the whole, farmers' expectations have been aroused for better prospects from the opening up of the economy. This is reflected in a big rise in private investment in agriculture in the 1990s.The annual average growth rate of private gross capital formation in agriculture was 8.1 per cent during the 1990s compared with –0.1 per cent during the 1980s and 7.2 per cent during the 1970s [Rao and Jeromi 2000]. Poverty is the other issue that enhanced the crisis in agriculture. Suicides started hitting the agricultural economy in globalization and whole perspective has been changed, as agriculture sector is itself in need of cure.

So in addition to declining public expenditure in 1980s falls in institutional credit and commercialization of crops aggravated the crisis in Indian agriculture.

This may be true in explaining overall stress in agriculture but when we look at the data on suicides in agriculture sector we find that these are taking place mostly in cotton crops and in specific states. So to explain the phenomenon of the suicides in Indian agriculture inter state comparison can be helpful. As it is concluded in several studies that cotton cultivators did most of the suicides so policy change in cotton sector specifically after liberalization give better understanding of the crisis in Indian agriculture.

Cotton is important in fields of both agriculture and industry. The cotton crop occupying around nine million hectares in India is the largest in the world and constitutes around 25 percent of the area under cotton cultivation in the world (Ron Herring)[1]. Around 25 million people are engaged in cotton cultivation and cotton accounts for livelihood of about 60 million people in India (Ron herring). Its value was around Rs 22,500 crore at current price in 2005 (http://dspace.brad.ac.uk: 8080/dspace/handle/10004/4961). India is the third largest producer of cotton in the world after china and USA and produced 177 lakh bales in 2004-05. However productivity has remained the lowest in the world 300-310kg/hect. Major advantage with India is its ability to produce all types of cotton varieties. Cotton is very important crop in

[1] Ron Herring, "Is There a Case of Growing Cotton in India", Indian Cotton Biology and Utility Meaning and Histories, Cornell university, April 29-30 2005.

India as more than 1 million farmers are engaged in this sector and this sector shares 30 percent of export earning.

After independence several steps were undertaken to improve the quality and productivity of cotton in India like minimum support price (MSP), procurement of cotton, subsidies on inputs. Cotton Corporation of India (CCI) a public sector agency was established for price support operation in cotton sector. Minimum support prices are announced by government, based on the recommendation made by Commission on Agriculture Costs and Prices. So even after so many efforts government got success only in raising area under cotton production as it has been increased from 6 million hectare in 1950 to 9 million hectare in 2005. Productivity increased after independence from 88 kg/hectare in 1950 to 300-315 kg/hectare in 2005 but this is still much below to the international average (590 kg/hectare). Reason behind low productivity in India as argued by Masanori Kondo[1] is the unattractiveness of domestic cotton market prices. He further argued that, the export restriction on cotton to check the price rise is not the only factor contributing to low yields. Other factors, such as the low percentage of irrigated areas, the lack of availability of good seeds and damage due to pest attacks, also led to stagnation of cotton yields in India. And according to him all these factors are in some way related to the price incentive.

By introducing open general license in 1994 cotton imports were made duty free by the government but under this regulation registration of imports were necessary. This restriction was removed in new export import policy (2001). Exports were used in Indian cotton scenario, as price stabilization policy in 80s. Government allowed cotton exports only when there was surplus production at home. Earlier there was export quotas that were announced by government in favor of different agencies such as Cotton Corporation of India (CCI), Maharashtra state cotton growing marketing federation (MSCGMF) etc. these export quotas were removed in 2001and exports were made free under open general license.

[1] Masanori kondo" The Political Economy of Commodity Export Policy, A Case Study of India", International Christian University, Tokyo Japan

As **Mourice Landes**[2] pointed in his paper that **globalization** only helped in raising area under cotton cultivation in India as area under cotton cultivation was rising at 1.5 percent in 1990s as compare to negative growth rate (-0.70%) that cotton sector experienced in 1980s. Production of cotton had been increasing consistently up to 1990 and growth rate was 4.4 percent in 1980s but during 1990s it fell down to 2.0 percent. According to him growth rate of productivity also fell down to 0.5 percent from 5.1 percent.

So area under cotton cultivation experienced rising trend because of its profitability but growth rate of production fell as well as productivity in cotton cultivation in 90s.

Further in cotton cultivation lack of government support and liberalisation policy aggravated the condition of farmers as it is pointed in a study that import liberalisation may be disastrous in liberal import regime as there is always a likelihood of the farmer's interest being hit by way of affecting the farmers' total income. However cotton imports were liberalised in 1994, as government was in strong financial condition, domestic cotton prices increased sharply induced farmers to shift to cotton production. Especially farmers in Andhra pradesh and Maharashtra that were growing food crops shifted to cotton even in rainfed areas. After that price started declining further in international market however cotton production was profitable till 1997 as prices were higher than cost of cultivation. The official findings were that US rigs the cotton market and keep the price of cotton low in a way that depresses the income of farmers in low-income countries. On March 3, the WTO upheld a ruling that various U.S. programs either contain illegal export subsidies or make payments that are higher than allowed to their cotton farmers. Federal programs paid $14 billion to U.S. farmers, processors, warehouses and exporters from 1995 to 2003 (Ron Herring, 2005)[2]. It is acclaimed by Carlos A. Valderrama Becerra that china that was net importer of cotton in international market become net exporter after 1998 that further helped in reducing prices of cotton in

[2] Maurice Landes, Stephen Macdonald, Santosh Kumar Singh, Thomas Volrath, "Growth Prospects for India's Cotton and Textile Industries", United state department of agriculture, cws-05d-01, June 2005

[2] Ron Herring, "Is There a Case for Growing Cotton in India?", Indian Cotton: Biology and Utility, Meanings and Histories, Department of Government and DGN, Cornell University April 29-30, 2005

international market. In the mean time most of the cotton producers shift to the genetically modified seeds from traditional seeds which require proper irrigation, spraying of costly pesticide and fertilizers, in the influence of government. So added with the problem of income instability due to price fluctuation the rising cost of cotton cultivation because of heavy use of pesticides increased the stress in cotton farmers. Unserviceable cash debts to pesticide firms figured prominently as the cause of suicides of ruined farmers in 1998 (Ron Herring). Rising cost of cultivation increased the need of credit further in globalisation period and institutional credit is necessary in the development process of agriculture, especially in the cotton production, to enhance production and productivity but inadequacy of institutional credit, as I mentioned earlier, was declining during globalisation period which led the cotton farmers to private moneylenders. Moneylenders charges very high interest rate. And this is the factor mentioned in various studies as major cause of suicide in cotton farmers.

Here I will compare Maharashtra with Gujarat for my study, as both states are major cotton producing states as well as industrially and agriculturally developed states in the country. Both states accounted roughly the same proportion of agriculture and industrial production in their total production. Both are major producers of cash crops in India like sugarcane and cotton and had experienced successful cooperative movement. But when it comes to stress in farmers we find that there is significant incidence of suicides by cotton farmers in Maharashtra but not in Gujarat, why? According to Mohanty* suicides in Maharashtra, which he correlates to Durkheim's concept of anomic suicide, are linked to the 'new' conditions faced by producers as a result of rapid economic growth in general and in particular the spread of neo-liberalism but same new conditions were faced by farmers in Gujarat but there are no suicide cases. Farmer's suicides in specific states are not only the result of policies adopted by union government in the light of globalization but also there was something seriously wrong with state government policies. Performance of agriculture sector across the states varies and

* Mohanty, B.B., "we are like the living dead: Farmers Suicide in Maharashtra. Western India", The Journal of Peasant Studies, April 2005

reasons as mentioned by Renuka mahadevan* are, difference in physical endowment, climatic condition, and institutional characteristics across the states. So she argued that economic reform would work less effectively then state specific policy measure.and I will precede my study in this direction.

Maharashtra's area under cotton cultivation has increased significantly but in Gujarat there is a marginal increase in area under cotton cultivation in globalization period. Area under cotton cultivation in Gujarat is just half of the area under cotton cultivation in Maharashtra during 80s as well in 90s also. In Maharashtra total area under cotton cultivation was 31.04 lakh hectares (2001-02), which is about 37 percent of the total area under cotton in the country (Sangeeta Shroff*, 2005) while it was 21 lakh hectares in Gujarat. But when we look at productivity in both states we find that it is more than double in Gujarat (417 kg/hect) as compare to Maharashtra (189 kg/hect). Larger share of the crop in Maharashtra is totally rain dependent and the share of irrigated cotton is low as five per cent (Sangeeta Shroff*, 2005) while in Gujarat about 35 percent of the area under cotton cultivation is irrigated (http://dspace.brad.ac.uk: 8080/dspace/handle/10004/4961).

This leads to a sharply lower cost of production compared to Maharashtra. The second key reason possibly is that the farmer in cotton growing areas of Gujarat has other sources of income like dairying, vegetables etc. for the urban industrial centers (Indian ngos.com.). With over 95% of cultivation of cotton in Maharashtra dependent on an uncertain monsoon, the risk of crop failure is high. The Minimum Support Price for Cotton (MSP) remained lower than the cost of production in many states. The 2004-05 report of the Commission for Agricultural Costs and Prices, estimated the cost per quintal of Cotton at Rs. 1643 for Gujarat and Rs. 2216 for Maharashtra. But there was one MSP of Rs 1960 for the country.

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* Renuka Mahadevan, "productivity growth in Indian agriculture: The role of globalization and economic reform", Asia pacific development journal, Vol. 10, No.2, December 2003

* Sangeeta shroff, "Cotton Sector in India", suicides by farmers in India: Background paper, 15 October 2005

Central government pushed heavily for border policies, input subsidies on fertilizer, power, irrigation remained largely unaffected by the reforms. Cotton is major crop in Gujarat only in those districts where irrigation facilities are well developed like Bhavnagar, Rajkot, Bharuch, Surendranagar while in Maharashtra suicide prone regions has no irrigation facilities, and cotton is purely rainfed. These things have increased their vulnerability to monsoon fluctuations. Less irrigation has decreased cotton productivity in Vidharbha region induced the farmers to use more fertilizers that increased their cost of production as compare to their counterparts in Gujarat?

1.2 REVIEW OF LITERATURE

Suri, 2006, (EPW)[3] recognises that agrarian distress is not a new phenomenon in India, but suicide by farmers is very much new to Indian agriculture. According to "The Commission on Farmers", set up by the Andhra Pradesh (2005) [1], agriculture is in advanced stages of crisis.... the most extreme consequences of the crisis are manifested in the suicides by farmers. Suri pointed out the two paradoxical situations in this regard.

1. A large number of farmers' suicides have been reported from the states, (a) which are relatively agriculturally developed, (b) which have seen strong peasant movement either in the colonial or post independence periods or both, (c) where the leadership of political parties come predominantly from farming communities. Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Maharashtra, and Punjab are the worst affected states and all of them share some or all these characteristics.

2. It is widely agreed that democracy in India is more stable and successful than in other developed country: that the Indian polity has been able to respond to and accommodate the interest of different sections of the population. But this does not seem to happen in India. Especially at the state level, a large number of political representatives

[3] Suri KC, " Political Economy of Agrarian Distress", Economic and political weekly, April22, 2006

claim to come from a farmers' background, but farmer's interest hardly find space in their imagination.

According to S Mahendra Dev[1] Main problems of the farmers in the present context are:

(a) Spurious input supply, viz seeds, fertilizers and pesticides;

(b) Inadequate credit from institutional sources and dependence on moneylenders for credit;

(c) Lack of water and drying up of groundwater;

(d) Farmers spend lot of money in sinking bore wells;

(e) Lack of extension services particularly for commercial crops;

(f) Exploitation in marketing;

(g) Lack of non-farm activities in rural areas; and

(h) Higher health expenditures.

Here it is necessary to mention the findings of report "Causes of Farmer Suicides in Maharashtra: An Enquiry, Final report Submitted to the Mumbai High Court, Tata Institute of Social Sciences March 15,2005", submitted to Mumbai high court by Tata Institute of Social Sciences. The team investigated 36 of the 644 cases of suicide.

The report reveals that the suicides are not restricted to one income level or landholding category. They have occurred among owners of large landholdings and the landless, and across all caste groups. Fifty per cent of the total sample was constituted by small landholders (who owned up to five acres), 43 per cent by medium landholders (who owned between five and 15 acres) and 5 per cent by large landholders (who owned more than 15 acres). The remaining 2 per cent owned no land. "The overwhelming numbers are reflected in the small and medium-sized holdings across caste groups. This is suggestive of a problem that is widespread, cutting across caste and class barriers," says the report. Of the sample, 89 per cent were married, and this indicates the pressure to provide for a household. A startling 81 per cent were literate, primarily because the majority of those

[1] S Mahendra Dev, "agricultural and rural employment in budget", EPW, April 2,2005

who committed suicide were men and there is a bias in allowing male children to pursue their education.

Seventy per cent of the total number of suicide victims grew **cotton** as their primary cash crop. The cost of cultivation for cotton is between Rs.2,500 and Rs.3,000 an acre. Another 5 per cent took up horticulture as the major occupation. The remaining 20 per cent cultivated Tur, Urad, Soybean, Jowar, vegetables and Sugarcane. Once again the data suggest that cultivators of all crops especially cotton cultivators in the specific region are affected. The report points out that a host of interlinked reasons landed the farmers in debt. The cost of cultivation of most crops has increased owing to higher input prices. This, the purchase of larger quantities of inputs and high cost of labour, increased the demand for cash. The absence of a corresponding increase in the prices of the produce affected the viability of farming. Moreover, the complete mismatch between the cost of production and the low minimum support price and market price created huge losses for the farmer. Money is also required for social needs such as marriages and education. In some of the cases studied, the debts were as low as Rs.10,000. According to the report, the loans ranged from Rs.10,000 to Rs.3 lakhs.

In a detailed break-up of the loans, which includes the size of the land held by the farmers and their sources of funds, the report states: "The largest group of borrowers is the small and medium landholders? As most of the time the victims have run out of credit with the banks, the only other source of funds is private lenders, who charge exorbitant interest rates as high as 5 per cent per month. Some even pledge their crop to the moneylender. But if it fails then there is little recourse left."

According to the report, the private lending component, which includes borrowing from relatives, accounts for about 50 per cent of the total lending? Primary agricultural credit cooperatives contribute 21 per cent of the loans and commercial banks and land development banks together contribute 18 per cent. The remaining came from a number of small sources. "This lends itself to an argument that the largest off take of credit is still being met by private sources," the report says. Essentially, "the resultant debt trap is due

to the inadequate credit supply to cultivators at affordable prices and due to the rising costs of production that cannot be met". While discussing the links between the suicides and the larger economic picture, the report says that heavy indebtedness is not a phenomenon that developed overnight. It has its roots in the credit policy that has been followed over a number of years. With the decline in investment in agriculture, there is a direct shortfall in credit given to cultivators. Field data suggest that crops failed repeatedly in the past four years. This was not entirely owing to the failure of rains. It occurred also because of a reduction in the productivity of land owing to the over-use of fertilizers and pesticides and the reliance on hybrid seeds and to some extent on genetically modified seeds such as BT cotton. "Thus crop failure becomes a cyclical phenomena and not a one-time occurrence," the report says.

Srijit Mishra in his research thorough a deep study of suicides in agriculture. In his research paper "Farmers' Suicides in Maharashtra: Content Analysis of Media Report" he mentioned that there are not a single cause behind suicides in agriculture. In his research he analysed the news report of a Marathi daily and concluded that these suicides are result of multiple factors. Indebtness, a manifestation of economic downfall, reliance on moneylenders and social disgrace are some of the factors he has mentioned. Among economic factors he pointed that increasing price risk and reducing profitability in cotton cultivation, withdrawal of states from the rural and agrarian scenario are the reason and among political factors he mentioned adverse development in the monopoly cotton procurement scheme as the reason behind these suicide.

Sangeeta Shroff mentioned in her paper "cotton sector in Maharashtra" that among cotton cultivators that constitute about 20 percent of the total cultivators in Maharashtra cotton is their primary crop hence their major source of income. And in cotton cultivation in Maharashtra there is yield uncertainty because of because of rain dependence, cost of cultivation is high, pesticide use in large quantities and increasing inability of the Maharashtra State Cooperative Cotton Growers Marketing Federation in providing a support against price volatility are some of the factors she has mentioned as cause of stress.

Deepak Shah in his paper "Resurrection of Rural Credit Delivery System in Maharashtra" mentioned that credit flow through Primary agriculture societies however increased in liberalisation period but it is much lower than other district when compared on the basis of amount of credit low per hectare of gross cropped area.

Anjali P. Kulkarni and Vinayak S. Deshpande in their article "Agrarian Scenario in Yavatmal, Washim and Wardha Districts pointed that in these districts there is a shift from one cash crops to other cash crops that is farmers are shifting from cotton to other crops like Pulses and Soybean. However farmers are shifting from cereals to cash crops but the trend of shifting from one cash crop to other cash crop is different from national scenario after liberlisation. Further the existing irrigated area is largely under sugarcane cultivation. He also mentioned the dependence of farmers on unregulated traders for their seeds and they provide spurious seeds to farmers and this became a major cause of crop failure in this region and which is concerned as a major cause of suicides by farmers. So not only liberalisation and irregular rainfall but also middlemen are causing stress among farmers and force them to do suicide.

1.3 OBEJECTIVE:

- **Whether globalization is the only cause of stress in agricultural sector's overall performance?**
- **Policy change were same for all states at central level than what went wrong with farmers in certain states that forced them to do suicide in slots?**
- **Why in most of the suicide cases cotton farmers are at the receiving end not other farmers?**
- **Why cotton farmers in Maharashtra are bearing the brunt of suicide while there are very few cases of farmer's suicides in Gujarat that is the second largest cotton producer in the country?**
- **Reasons behind suicides in certain districts namely Akola, Wardha, Yavatmal and Amravati in Maharashtra.**

1.4 HYPOTHESIS:

- **Globalization is the cause of stress in agriculture but not the only cause of suicides in agricultural sector.**
- **No alternative source of income with the farmers of Maharashtra is the cause of farmer's suicides in Maharashtra.**
- **Cotton cultivation with less or no irrigation in cotton cultivation in Amravati division of Maharashtra is the reason behind suicide cases of cotton farmers.**
- **Malfunctioning of government agencies is one of the causes behind suicides by the farmers in Maharashtra.**

1.5 DATA SOURCE

The methodology of research especially for data collection is based on both secondary and tertiary sources. Secondary sources include various field study reports, government documents and census data. The government document includes reports of Reserve bank of India on Indian Economy, Situation Assessment Survey of Farmers (report by NSSO), data from cotton advisory board's official website, Planning Commission Report and the State government reports include reports of Directorate of Economics and Statistics. Census data are used to know the population, literacy, occupation and so on. The tertiary source of data collection includes the existing literature like books, articles, journals and newspapers, which is relevant to this study.

1.6 ORGANISATION OF STUDY

In this research paper I have discuss change in the policies in the globalization and their impact on agricultural sector in chapter 1, policy change at central level and state level. Changes in policies after liberalization and prior to liberalization, growth rate before and after liberlisation diversification in agriculture sector is discussed in first

section. In second section discussion is about factors that contributed to slowdown of growth rate in agriculture like downward trend in input use, increase in marginal holdings, fall in public expenditure specifically public investment in irrigation, fall in institutional credit to farmers as a whole and small farmers in particular in globalisation. In third and fourth section trade in agriculture sector and subsidies to agriculture sector has been discussed. In final section impact of this liberlisation on farmers is discussed as indebtness among farmers and suicide in agriculture sector.

Third chapter deals with comparative analyses of agriculture sector in Gujarat and Maharashtra. First section deals with trend in state domestic product, cropping pattern and trend in input use in both the states. In second section discussion of farmer's situation like landlessness and education among farmers, their monthly income and expenditure, productive assets of the farmers, indebtness among the farmers, purpose and source of their loan, role of information and insurance is done. This assessment is also done according to the size class of land.

Fourth chapter deals with cotton sector in India. In first section performance of cotton sector in globalisation and government policies regarding import and export of cotton is discussed. In second section regional location of cotton production and types of cotton that is produced in India has been discussed. Third section deals with government intervention in cotton sector like procurement of cotton by Cotton Corporation of India and minimum support price. Last section deals with farmers in cotton sector their distribution according to holding sizes, input use in different size classes and state wise distribution of cotton farmers. Last section deals with suicides in various division of Maharashtra and specifically in Amravati division, as this is a suicide prone area in Maharashtra. In next section cropping pattern of Amravati division, as this is a major cotton-producing region in Maharashtra I have compared these with major cotton producing districts of Gujarat and input use in these districts has been discussed. Finally a suicide in three major cotton-producing districts of Gujarat is discussed. Finally I concluded the study in fifth chapter with policy implications.

CHAPTER 2

TRENDS IN AGRICULTURAL SECTOR PRIOR AND AFTER LIBERALIZATION

CHAPTER 2

Trends in agriculture sector prior and after liberalization

In 2001 above 70 percent of population was residing in rural areas. Proportion of rural population that is dependent on agriculture has not changed since 1951 and population employed in agriculture and allied activities was 57 percent in 2001 as compare to 69 percent in 1981 (Agriculture Statistics at a glance 2004). Contribution of agriculture sector to the economy declined to 22 percent in 2003-04 as compare to 40 percent in 1981. Still 57 percent of the population is dependent on 22 percent of the total output in India.

After independence production in agriculture sector was increasing at the rate of 2.7 percent annually. Changes in decadal growth rates or growth rates in different plan periods shows impact of the policy changes that took place at central level. Developments in Indian agriculture can be divided in four periods according to the policies adopted by the government.

1. Prior green revolution period (1950-1965).
2. Green revolution period (1965-66 to 1975-76)
3. Post Green revolution period 1975-76 to 1990)
4. Globalization period (After 1991)

Main policy thrust in pre green revolution period was land reforms however modernizing agriculture through large-scale investment in irrigation and power, creation of other infrastructure such as credit institutions, regulated markets, roads and extension and also research institutions remained in focus. So immediately after independence, India abolished intermediary landlordism (zamindari system), giving occupancy rights to 20 million statutory tenants. Dantwala (1986) argued that the "abolition of zamindari and similar intermediary tenures, which were highly inequitable and oppressive, was a progressive measure. As a result of the implementation of the land ceilings since the 1950s, a total of 3.01 million hectares (mha) of land was declared surplus, nearly 2.31

mha (less than 2 per cent of the cultivated land) was taken over and 1.76 mha was distributed among five million beneficiaries, half of whom were SCs and STs (Dantwala 1986).

In the green revolution period from the mid-1960s to 1991, the agricultural sector grew at 3.2 per cent during 1965-1966 to 1975-1976 (Renuka mahadevan, 2003). Green revolution period experienced the mechanization of agriculture that changed the input structure as instead of using traditional labor. Use of fertilizers, high yielding varieties of seeds, pesticides, tractor, etc. increased in the Green revolution period, which increased the productivity in agriculture sector but simultaneously it increased the cost of cultivation because of mechanization. Post green revolution period can be further divided in two sub periods that are 1975 to 1980 and 1981 to 1990. During 1975-80 there was rapid expansion of credit from the commercial banks to agriculture and agriculture sector grew at 1.94 percent (State of the Indian farmers: A millennium study)*. After 1980 Indian agriculture experienced diversification in agriculture, as there was shift in area under food crops to cash crops and this trend continued in 1990s but growth rate declined and this is the period that I am going to discuss.

2.1 Agriculture prior and after liberalization

The sequence of reforms undertaken in 1990s we find that agriculture sector was not liberalized in 1991 itself as reforms were focused largely on trade liberalization, encouraging foreign direct investment, reforming capital markets and deregulating domestic business. Agricultural sector was liberalized step by step during 90s.

In the post-reform period, policy emphasis has shifted to liberalizing trade in agriculture. In the beginning, economic reforms bypassed agriculture in terms of direct reforms, except with trade liberalisation and relaxation of some export controls over agricultural products. However, subsequent currency devaluation, a shift towards floating exchange rates and reduction in industrial production has had indirect effects on the agriculture sector. With the establishment of WTO on January 1, 1995 and India

* Surjit singh, Vidya Sagar, "agriculture credit in India", State of Indian farmer: A millennium Study, department of agriculture and cooperation, Government of India, 2004

becoming its member, all quantitative restrictions (QRs) were dismantled by the end of March 2001. It is argued that these policy shifts would provide an opportunity for our farmers and agro-based industries to tap world markets.

Agricultural production increased almost ten times since 1981 at current price while at constant price it become double in 1991-92 but when we look at the share of agriculture sector in domestic production throughout this period we find that it was declining drastically in the study period. It was 35.63 percent of the GDP at factor cost in 1981-82, which declined to 28.58 in 1991-92. It experienced further decline in globalization and reached to 22 percent in 2001-02.

Share of agricultural production, which was declining in both periods added with this phenomenon, was the fall in growth rate in agricultural production in globalization period and this phenomenon increased the stress in agricultural sector.

In the initial years of reforms from 1990-91 to 1995-96 growth was 3.16 percent that is higher than growth rate that India achieved in 1980s (3.13). Growth rate declined in the later part of 1990s that is 1.75 percent from 1996-97 to 2003-2004 (Ramesh Chand, Pramod Kumar)[1]. This we can see in following table that shows the fall in growth in agriculture sector in 90s as compare to 80s.

Growth rate of agricultural production declined to 2.5 percent in reform period while it was 3.1 percent in the pre-reform period that is from 1981-82 to 1990-91 at constant price. This declining trend was also observed at current prices.

Table 2.1

Annual Growth rate in agriculture sector

PERIOD	AT CONSTANT PRICE	AT CURRENT PRICE
1981-82 to 1990-91	3.1	11.2
1991-92 to 2003-04	2.5	9.1

Source: Derived from data given in Handbook of Statistics on Indian economy, Reserve Bank of India

[1] * Chand, Ramesh and Kumar pramod, "determinant of capital formation and agriculture growth: Some new explorations", Economic and political weekly, December 25, 2004

2.2 Factors contributed in slow down of growth rate in agriculture

2.2.1 Changes in household ownership of land

Other major trend that Indian agriculture was experiencing in green revolution period is declining area under household owner ship. This may be the major cause of declining growth in Indian agriculture as application of inputs was taking place in excessive quantity given that there was not any technological change and holdings are getting smaller and smaller can only lead to negative marginal productivity of inputs . In following table it can be seen that average area owned per household has come down to 0.81 hectares in 2003 as compare to 1.44 hectare in 1982.

Table 2.2

Changes in household ownership of land during 1982 to 2003 (All-India Rural)

ITEMS	1982 (37TH ROUND)	1992 (48TH ROUND)	2003 (59TH ROUND)
Estimated area owned (000 ha)	119736	117354	107228
Average area owned per household (ha)			
a) Including landless households	1.28	1.01	0.73
b) Excluding landless households	1.44	1.14	0.81
Percentage of landless household	11.3%	11.3%	10.0%

Source: situation assessment survey of farmers, NSSO

2.2.2 Fall in public expenditure and capital formation in agriculture

Post green revolution period experienced diversification that further increased the cost of cultivation, as input structure of commercial crops is much cost intensive added with Eighties experienced the decline trend in public investment that was compensated by rising trend in private investment and this trend continued in globalization. Economists further argued that reason behind rising private investment since 1980-81 is the declining trend in public investment. Several regression models were used to prove that there is negative relationship between public investment and private investment. Taking the data

of 70s economists proved that there is a positive relationship in public and private investment and by taking data of 80s it was proved that there is negative relationship between private and public investment. This created the problem that whether public investment has positive impact or negative impact on private investment. This asymmetric behavior of private investment was explained by Pramod Kumar and Ramesh chand* and according to him 1 percent increase in public investment leads to 0.17 percent increase in private investment and 1percent fall in public investment result in increase in private investment by 0.2 percent. He further argued that this behavior implies that increase in public investment increases the private investment by farmers as their income increases and decline in public investment forces the farmers to increase the private investment.

Declining trend of **public investment** in agriculture of 1980s continued in 1990s. In reform period the declining trend in public investment in agriculture continued at cost of development of rural infrastructure, especially irrigation. Public investment in agriculture has been declining for the last two decades, falling from 3.4 percent in 1980-81 to 1.3 percent in 2000-01 as a proportion of GDP. This has adversely affected the public sector investment in irrigation as more than 90 percent of the total public investment in agriculture goes to irrigation sector (TISS, 2005). In the following table we can see that public expenditure in agriculture was falling at the rate of 4.4 in 1980s and this decline however slowed down in globalization so globalization only cannot be blamed for declining trend in public expenditure as it started long before liberalization policies were adopted in India.

Table 2.3

Growth rate of Gross capital formation in agriculture at 1993-94 prices

PERIOD	AGRICULTURE	FOREST AND LOGGING	TOTAL
1980-81 to 1989-90	-4.4	2.6	-3.9
1990-91 to 2001-02	-0.6	-0.3	-0.5

Source: National account statistics of India, Economic and political weekly research foundation, Mumbai, December 2004

* Chand, Ramesh and Kumar pramod, "determinant of capital formation and agriculture growth: Some new explorations", Economic and political weekly, December 25, 2004

So on the one hand public expenditure was falling in 80s as well as in 90s and on the other capital formation in agriculture that experienced negative trend in 80s started rising at the rate of 2.5 percent in 1990s(appendix). This shows the rising trend in private investment in agriculture. Here we can look at the trend in both public and private investment.

Capital formation in agriculture in absolute terms was rising and reached to 16545 crores in 2000-01 but as a percentage of GDP it fell from 1.6 percent in 1993-94 to 1.3 percent as it experienced declining trend in 90s. This fall in capital formation in agriculture sector is also true when compared to the gross capital formation in the economy. As we are comparing public and private capital formation in agriculture we find in the following table that share of public expenditure was falling and it reached to 24.2 percent in 2000-01as compare to 33 percent of total capital formation in 1993-94. However share of private sector in capital formation in agriculture increased76 percent in 2000-01.

Table 2.4

Investment in agriculture

	Gross Capital Formation				% Share of			Investment in agriculture as a percentage of GDP
	Agriculture	Total Economy	Public sector in agriculture	Private sector in agriculture	Public sector in agriculture	Private sector in agriculture	Agri. To total	
1993-94	13523	181133	4467	9056	33.0	67.0	7.47	1.6
1994-95	14969	229879	4947	10022	33.0	67.0	6.51	1.6
1995-96	15690	284557	4849	10841	30.9	69.1	5.51	1.6
1996-97	16176	248631	4668	11508	28.9	71.1	6.51	1.5
1997-98	15942	256559	3979	11963	25.0	75.0	4.77	1.4
1998-99	14895	243697	3869	11026	26.0	74.0	6.11	1.3
1999-00	16582	268374	4112	12470	24.8	75.2	6.18	1.3
2000-01	16545	274917	4007	12538	24.2	75.8	6.02	1.3

Source: Final report submitted to the Mumbai High Court, Tata institute of social sciences

Share of gross fixed capital formation going to agriculture sector declined to 0.4 percent in 2000-01 from 0.7 percent in 1990-91. However same trend was observed in 80s as share gross fixed capital formation going to agriculture sector was 1.8 percent, which reduced to 0.7 percent in 1990-91.

Table 2.5

Gross Fixed Capital Formation in Agriculture at 1993-94 Prices (Public Sector)

(Rs. crore)

YEAR	GROSS DOMESTIC PRODUCT	GFCF IN AGRICULTURE	PERCENTAGE SHARE IN GDP
1980-81	401128	7358	1.8
1985-86	513990	6005	1.2
1990-91	692871	4871	0.7
1995-96	899563	5318	0.6
2000-01	1148442	4637	0.4

Source: National account statistics of India, Economic and political weekly research foundation, Mumbai, December 2004

Diversification, fall in public investment, increase in private investment in agricultural sector continued in globalization era and the factor that increased the vulnerability of farmers in 1990s was the declining trend in institutional credit to farmers and this we will see in further sections.

2.2.3 Credit to Farmers

Given an understanding of the seasonal credit requirement, importance to institutional credit is given in the development process to enhancing production and productivity and for poverty alleviation. Agriculture credit is not input but it helps in creating environment for the adoption of modern production technology and encouraging private investment on the farm. It has been noted that though the institutional agriculture credit has increased but with declining growth rate on an overall basis and with unequal

spread in different the regions of the country. Co-operatives, commercial banks, Regional Rural banks are responsible to provide the institutional credit. Credit to farmers is given on the concessional rate.

The development of rural credit delivery system had three distinct phases. While the first phase (1904-1969) encompassed the monopoly of the credit cooperatives, the second phase (1969-1991) was marked with the induction of the commercial banks into the rural credit delivery system through their nationalization in 1969 and the setting up of the RRBs all over the country in 1975 with a view to provide low cost banking facilities to the weaker sections of the society (Puhazhendi and Jayaraman, 1999). The third phase, concomitant with the introduction of financial sector reforms, is characterized by the transformation of credit institutions into organizationally strong, financially viable and operationally efficient units. The emphasis of the financial sector reforms is on ensuring financial health of the rural credit delivery system.

2.2.4 Trend in institutional credit provided to agriculture sector

Fall in institutional credit started after 1990-91 was the other major reason as mentioned above, behind stress in rural economy as pointed by Singh and Sagar (2004) that priority sector lending to agriculture came down from 16 percent in 1990 to 11.6 percent in 1999.

Table 2.6

Growth rate of Direct Institutional Credit for Agriculture and Allied Activities - Total

PERIOD	LOANS ISSUED				LOANS OUTSTANDING			
	Cooperatives	SCBs	RRBs	Total	Cooperatives	SCBs	RRBs	Total
1981-82 to 1990-91	8.8	14.48	10.63	9.3	9.3	17.85	25.24	14.65
1991-92 to 2003-04	11.3	15.96	21.22	13.46	7.1	10.88	14.31	8.92

Source: Derived from data given in Handbook of Statistics on Indian economy, Reserve Bank of India

In the above table it is apparent that growth rate of loan issued by government agencies specifically established for agriculture sector has increased to 13.46 percent annually in globalization as compare to 80s when loans issued by this agencies was growing at the rate of 9.3 percent. But this trend growth rate is different when we look at loans outstanding in corresponding period. Growth rate of loan outstanding was almost halved down in 1990s to 8.92 percent annually from 14.65 percent annually in 1980s. In this fall of loan outstanding, scheduled commercial banks and regional rural banks played an important role as their growth rate fell to 10.88 and 14.31 percent respectively in 90s as compare to 17.85 and 25.24 percent in 80s. However loans given by cooperatives also experienced falling trend in 90s, as growth rate of loan outstanding was 7.1 percent in 90s as compare to 9.3 percent in 80s.

2.2.5 Performance of Regional Rural Bank Finances

Notably, in the wake of economic liberalization now underway in India, the banking sector in general and Regional Rural Banks in particular are experiencing sweeping changes. Although RRBs have played a predominant role in supplementing the efforts of the Government in eradicating poverty by dispensing credit under Government sponsored programmes, their erosion in profitability and the poor sustainability is causing much concern. The policy regime under which they performed contributed greatly to this state of sorry affairs. In fact, RRBs were initially set-up in India in 1975 as low cost bank with the prime objective of meeting the credit requirements of rural poor. Though these rural financial institutions have created awareness for banking practices amongst the rural masses, in course of time they appeared to have lost their initial image of low cost bank (Deshpande, et.al. 1998). A review of performance of RRBs over the past one-decade or so shows an estimated aggregated amount of loss to the tune of Rs.15.86 crores incurred by 130 RRBs in 1984-85, which is seen to have grown to Rs.621.00 crores incurred by 162 RRBs in 1991-92 and further to as high as Rs.3047.87 crores incurred by 152 RRBs in 1996-97. Due to huge accumulated losses and operational deficiencies, the very survival of RRBs is now at stake and it has become a matter of concern. In order to strengthen the organizational structure of RRBs, several committees were constituted

from time to time. In course of time, the RRBs in India have shown a drastic fall in their credit-deposit (C-D) ratio. The C-D ratio of RRBs at all-India level has come down from 123 per cent during 1981 to as low as 43 per cent by the TE 2000.

Table 2.7

Progress of deposit and credit of Regional Rural Banks (RRBs)

PERIOD	DEPOSIT	CREDIT	CD RATIO (%)
1981	33147	40682	122.73
TE 1985	97075	107492	110.73
TE 1990	353554	321839	91.03
TE 1995	861931	528835	61.35
TE 2000	2685412	1152160	42.90

Source: Reserve Bank of India Occasional Papers Vol. 27. 2006

2.2.6 Performance of scheduled commercial banks

The direct agricultural advances increased from Rs 3436 crores in 1980-81 to Rs 38128 crores in 2000-01 at an annual growth rate of 13.05 per cent. A target of 18 per cent of net bank credit has been set for lending to agriculture sector for schedule commercial bank (SCBs). Despite significant growth in agriculture advances, only 5 SCBs have achieved this target showing that still greater effort for increasing agricultural credit is required from SCBs (reserve bank of India, 1991).

In the following table it is very apparent that growth rate of number of accounts with scheduled commercial banks of small and marginal farmers has been halved to 4.3 percent annually in 1990s as compare to 1980s where it was 8.6 percent. The growth rate of amount dispersed to small farmers also came down to 14.8 percent in 1990s from 20.61 percent annually in 1980s.this shows that vulnerability of this section of farmers has been increased in liberalization period as compare to large and medium farmers. However growth rate of accounts has come down to 6.5 percent annually in 1990s as compare to 8 percent in 1980s but when we look at amount dispersed to this section of

farmers we find that growth rate has been come down marginally to 17.12 percent in 1990s from 18.74 in 1980s. This whole trend shows that credit to agriculture sector came down in globalization period and small and marginal farmers were badly affected by this phenomenon and were committing suicides, which we will see in further sections.

Table 2.8

Growth rate of Scheduled commercial bank's direct finance to farmers according to size of land holdings (disbursements) short term and long-term loans

PERIOD	UP TO 2.5 ACRES		ABOVE 2.5 ACRES TO 5 ACRES		ABOVE 5 ACRES		TOTAL	
	Numbers of accounts	Amount	Numbers of accounts	Amount	Numbers of accounts	Amount	Numbers of accounts	Amount
1981-82 to 1990-91	8.6	20.61	11.4	21.79	8.0	18.74	9.2	19.98
1991-92 to 2003-04	4.3	14.8	4.7	16.35	6.5	17.12	5.05	16.34

Source: Derived from data given in Handbook of Statistics on Indian economy, Reserve Bank of India

2.2.7 Access to Institutional Credit of Small Farmers

The small and marginal farmers constitute 80 per cent of the operational holding and cultivate about 36 per cent of the area in India. Their number is expected to increase in future due to sub-division of holding and lack of employment opportunities in the non-farm sector.

The number of small borrower accounts in the case of commercial banks has come down over time (NABARD, 2001) indicating shifting of their focus to large borrowers. The all India Debt and investment survey (AIDIS) showed that rural households with assets less than Rs20,000 had access to institutional loans for their credit needs only up to 35 to 37% while the share of non-institutional agencies in the outstanding debt was as

high as 52 to62 per cent. In case of higher asset households, 70 per cent of the outstanding debt came from institutional sources.

Table 2.9

Per 1000 distribution of outstanding loans (in Rs.) by source of loan for each size class of land possessed by farmer households India

SIZE CLASS OF LAND POSSESSED	GOVT.	CO-OP SOCIETY	BANK	AGRI./PROFESSIONAL MONEY LENDER	TRADER	RELATIVE	DOCTOR, LAWYER ETC.	OTHER	ALL	ESTD NO. OF INDEBTE HHS (00)
<0.01	19	53	154	473	40	231	10	20	1000	5708
0.01-0.40	40	145	248	318	49	149	14	37	1000	130112
0.41-1.00	38	170	320	308	46	91	7	20	1000	129211
1.01-2.00	17	205	354	259	42	88	8	26	1000	81920
2.01-4.00	15	226	410	234	47	51	4	14	1000	54409
4.01-10.0	13	230	445	167	61	56	15	12	1000	27734
>10.00	17	232	427	172	106	40	0	6	1000	5148
All sizes	25	196	356	257	52	85	9	21	1000	434242

NSS Report No. 498: Indebtedness of Farmer Households, 2003

In above table we can observe that marginal and small farmers are more dependent on moneylenders as they fulfill almost 50 percent of their credit need as compare to large farmers where loans from money lender constitute only 26 percent of their total credit need. Large farmers are more dependent on banks and cooperative societies.

2.3 Impact of fall in public expenditure and institutional credit

2.3.1 Slowdown in diversification process

Growth rate in agricultural sector declined in globalization as well as the diversification process but slow down of the diversification cannot be blamed for the slowdown in agricultural growth because both sector food grain as well as non-food grain crops experienced slowdown in their production in 90s.

This we can see in the following table. Taking the base as triennium ending 1981-82 it is shown in the following table that area under food grains declined from

101.7 in 1991-82 to 96 in 1991-92, production increased to 144 in 1990-91from 104.9 in 1980-81 and productivity also experienced rise as it increased to 136.5 from 105.9 in the same period. In case of non-food grain crops not only production and productivity but area also experienced rise as production increased to 164 from 111.8, productivity increased to 128.0 from 99.2 and area increased to 123.2 from 104.1 in the same period.

But in globalization period area under food crops remained more or less same, as it was 127.4 in 1993-94 and 127.5 in 2001-02, production experienced slight increase from 135.1 to 155.5 in the same period and productivity also experienced slight increase.

Area under nonfood crops experienced slight increase in area as it increased from 111.2 in 1993-94 to 115 in 2001-02. Same trend was observed in production. But when we look at the productivity trend we find that there is rise in productivity in case of noon food crops.

Table 2.10

Index number of area, production and yield of foodgrains and non-food grain

		FOOD GRAINS			NON-FOODGRAINS		
Year		Area	Production	Productivity	Area	Production	Productivity
(Base: TE 1981-82=100)	1981-82	101.7	107.6	105.9	104.1	111.8	106.4
	1991-92	96.0	137.6	136.9	124.8	158.0	123.7
(Base: TE 1993-94=100)	1993-94	127.4	135.1	106.0	111.2	110.7	99.5
	2001-02	127.5	155.3	121.8	114.9	124.6	108.2

Source: Handbook of Statistics on Indian economy, Reserve Bank of India

However it was expected that globalization will increase the diversification process through commercialization of the agricultural but against expectation it slowed down the diversification process in agriculture. In 1994 import restriction on oilseeds,

sugar and cotton were liberalized and restrictions on rest of the agricultural commodities were totally removed in 2001.

Growth rate of area under sugarcane slowed down to 0.9 percent in 1990s as compare to 1980s in which it was growing at 1.3 percent. Area under oilseeds that was growing at the rate of 2.9 percent in 80s became negative in 90s. Area under rice cultivation also slowed down 90s as compare to 80s and the area under coarse cereals which was declining at the rate of 1.5 percent also slowed down to 1.2 percent. The only crop that's growth rate of area under cultivation picked up in globalization is cotton. Area under cotton cultivation experienced a negative trend in 1980s but in 1990s there was major shift of area under cotton cultivation in certain states like Andhra pradesh and Maharashtra. It experienced a growth rate of 0.7 percent in 90s. Impact of removing import restriction on cotton can be seen in the increased area under cotton cultivation as area under cotton cultivation increased to 9.04 million hectare in 1995-96 from 7.87 in 1994-95 (table2 appendix).

Table 2.11

Trend growth rate in area under major crops

PERIOD	RICE	COARSE CEREALS	COTTON	SUGARCANE	OILSEEDS
1981-82 to 1990-91	0.60	-1.5	-0.9	1.3	2.9
1991-92 to 2003-04	0.09	-1.2	0.7	0.9	-0.8

Source: Derived from data given in Handbook of Statistics on Indian economy, Reserve Bank of India

2.3.2 Fall in the use of Inputs

Post green revolution period experienced diversification that further enhanced the cost of cultivation, as input structure of commercial crops is much cost intensive

added with this 80s experienced declining trend in public investment that was compensated by rising trend in private investment. This trend continued in globalization. In this period government started neglecting agriculture sector and allowed private institutions to increase their participation. Other major trend that globalization experienced was slowdown of institutional credit to agricultural sector, rise in private investment and subsidy in agricultural sector. So here I am comparing trend in Indian agriculture in 80s to trends in 1990s.

In the following table we can see that in globalization period growth rate of input use in agriculture slowed down. Growth rate of net irrigated area came down to 0.9 percent annually in 1990s from nearly 1.8 percent in 1980s. Gross irrigated area also experienced the same trend. Growth rate in area under high yielding varieties slowed down to 2.9 percent in 1990s from 3.2 percent in 1980s. When we look at consumption of fertilizer and pesticide that form the major portion in variable cost in farming we find that growth rate of fertilizer and pesticide experienced decline in 90s as compare to 80s. Fertilizer use slowed down to 3.1 percent in 1990s from 7.7 percent in 80s and pesticide use has experienced almost negative trend in 1990s.

Table 2.12
Growth rate of Pattern of land use and selected inputs for agricultural production

PERIOD	NET IRRIGATED AREA	GROSS IRRIGATED AREA	AREA UNDER HYV	CONSUMPTION OF FERTILIZERS (N+P+K) LAKH TONNES	CONSUMPTION OF PESTICIDES (TECHNICAL GRADE MATERIAL '000 TONNES)
1981-82 to 1990-91	1.8	2.2	3.2	7.7	5.3
1991-92 to 2003-04	0.9	1.1	2.9	3.1	-4.5

Source: Derived from data given in Handbook of Statistics on Indian economy, Reserve Bank of India

2.4 Trade in agriculture

2.4.1 Terms of trade in reform period

Improvement of terms of trade in favor of agriculture, increase in agricultural export through improved access to domestic and international market were the argument put forward by the economist who favor globalization.

In the initial years of globalization policy it was assumed that reduction in support to industrial sector would turn the **terms of trade** in favor of agriculture (Landes and gulati 2003)[1] as prices of industrial products would come down because of competition from low cost products from industrialized world. Terms of trade for agriculture that was 82.4 in1985-86 became 93.9 in 1995-96. Growth rate of terms of trade in favor agriculture in this period was around 1 percent.

Table 2.13

Terms of trade for agriculture sector

YEARS	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96
Terms of Trade	82.4	85.3	86.9	86.2	86.5	89.9	92.1	86.0	90.04	91.2	93.9

Source: Agricultural costs and price in India, 1997-98

It was assumed that this movement in terms of trade would increase the flow of investment in agriculture and that's what happened as private investment in agriculture increased in 1990s also as compared to previous years (state of Indian farmers). Together with fall in public investment, globalization because of movement of terms of trade in favor of agriculture helped in rising private investment in agriculture.

1

It is further argued by Rimjhim aggarwal (2006)[1] that the inability of the government to control the large outlays on subsidies for agricultural inputs and outputs because of fear of political retaliation, together with fiscal tightening, curtailed its ability to invest in rural infrastructure.

Second argument in favor of globalization was that it will increase the agricultural export because of depreciation of rupee as rupee was made convertible at current account, was not the case with agriculture as Renuka mahadevan pointed out that exchange rate is not the key factor in determining agricultural export demand for India.

2.4.2 Import and export of agricultural commodities

In following table agricultural exports as a percentage of total exports were declining and import as a percentage of total imports were rising in the period of globalization. So it can be said that globalization has helped only in increasing imports of agricultural products while it reduced the exports from agricultural sector. And the adverse impact of this phenomenon can be seen in agricultural suicides.

Table 2.14

Import and Export of Agriculture Commodities vis-à-vis Total National Imports and Exports during 1990-91 to 2001-02

YEAR	AGRICULTURE IMPORTS	TOTAL NATIONAL IMPORTS	%AGE AGRICULTURE IMPORTS TO TOTAL NATIONAL IMPORTS	AGRICULTURE EXPORTS	TOTAL NATIONAL EXPORTS	%AGE AGRICULTURE EXPORTS TO TOTAL NATIONAL EXPORTS
1990-91	1205.86	43170.82	2.79	6012.76	32527.28	18.49
2000-01	12030.36	226773.47	5.31	28909.30	202509.76	14.28

SOURCE: AGRO EXPORT IMPORT STATISTICS AT A GLANCE

[1] Rimjhim M Aggarwal, "Resource poor farmers in India, On the margin or frontiers of globalization?" united nations university, Research paper no. 2006/97

However middlemen in agriculture sector plays an important role in agricultural trade and farmers rarely get benefit out of this trade but even that trade experienced declining trend in 90s. Exports came down 14.28 percent in 2000-01 from 18.49 percent in 1990-91 however on the other hand imports were rising in the same period and reached to 6.56 percent in 2000-01 from just 2.79 percent in 1990-91.

2.5 Subsidy

Government provides the subsidies on fertiliser, irrigation, credit etc, which suppose to reduce the cost of cultivation. This increases our capability to compete in international market in scenario when developed countries are providing to high subsidies on agriculture products. In India, government provides subsidy mainly on input purchase. These subsidies are helpful in reduction of cultivation cost and also work as the incentive to adopt new technology. Agriculture subsidy in India for different year is shown in following Table.

It is clear from table that total agriculture subsidy increases up to 2001-02 but then it falls in 2002-03. It is also true for the electricity and fertiliser subsidy. If we look the irrigation subsidy, it is continuously-increasing between 1993-94 and 2002-03. However subsidies provided to small and marginal farmers was decreasing in globalisation period.

Table 2.15

Subsidies to the Indian Agriculture Sector (Rs crore)

	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03
Fertilizer	4562	5769	6735	7578	9918	11596	13244	13800	12595	11015
Electricity	2400	2338	1977	8356	4937	3819	4276	6056	9342	7354
Irrigation	5872	6772	7931	9221	10318	11827	11487	13756	14602	15401
Other subsidies given to small and marginal farmers	1235	1246	1034	895	983	1182	1137	927	978	1259
Total	14069	16125	17677	26050	26156	28424	30944	34539	37515	35029

Source- Agriculture Statistics at the Glance, 2005, Ministry of Agriculture, Government of India

2.6 Domestic Support

WTO provisions on domestic support have some important ramifications for India. In India, product-specific support for many important agricultural commodities is negative since the domestic administered prices for them are lower than the border prices. However, the amount of input subsidies is quite high and rising. Hence the non-product support has become quite high and was 8.6 % of agricultural output in 1999-00.

Table 2.16

Products Specific Supports for Various Commodities 1986-87 to 1999-00As % of value of Output of respective Commodity (Fixed Price Base)

Year	1987-88	1990-91	1995-96	1998-99	1999-00
Cotton	-204.74	-209.26	-220.29	-229.60	-215.58
Jute	-125.59	-134.14	-185.05	-170.27	-141.26

Source: Agriculture statistics at glance 2005

Domestic support provided by the government in Irrigation sector remained same even in globalisation period. Same trend was observed in the credit sector. And both these sector are very much crucial in commercialisation of agriculture has become necessity in a globalise era. But looking at support provided in fertilizer sector and power sector we can observe that it has been increased in globalisation period as compare to 1980s. This trend only shows that government is very much influenced by corporate and it seems that they are propagating their companies by government policies

Table 2.17

Non-product Specific Support as a % of Value of Agricultural Output

	1987-88	1990-91	1995-96	1996-97	1998-99	1999-2000
Irrigation	1.49	1.45	1.58	1.59	1.52	1.44
Credit	0.08	0.05	0.07	0.07	0.04	0.07
Fertiliser	0.96	0.92	2.08	2.12	2.25	2.47
Power	2.51	2.32	3.97	3.90	4.09	4.58
Seed	0.08	0.05	0.00	0.00	-0.01	0.00
Total Non Product Support	5.12	4.73	7.70	7.67	7.90	8.57

Source: National Income Statistics, and Agriculture At a Glance

2.7 Impact of globalisation on farmers

2.7.1 Indebtedness Among the Farmers

. In following table we can see that indebtness among farmers, which was 22.3 percent in 1981 increased to 25.9 percent in 1991. However this is not a significant rise if we compare it to the development in 1990s. In globalisation period indebtness among farmers increased to 57.2 percent in 2003.

Table 2.18
Indebtedness Among Farmers

YEAR	PERCENTAGE INDEBTED CULTIVATORS
1971	46.1
1981	22.3
1991	25.9
2003	57.2

Source- RBI Bulletin May 1999 (for the years 1971, 1981 and 1991) and NSSO (2003)

According to NSSO survey (2003), 147.90 million rural households in the country, around 89.35 million households or roughly 60 per cent are cultivator

household. Of these cultivator households, 48.6 per cent translating into 45.40 million households are indebted to either formal or non-formal source or to both.

Only 27 per cents of cultivator household are covered by the institutional sources, so remains 63 per cents are still dependent on informal source for credit. Farmers with the large land holding are getting more credit from banks, i.e., coverage of marginal or small farmers, by institutional credit, is very low. It is highly related with the level of agricultural development.

2.7.2 Indebtedness of farmer households by size class of land possessed

Present estimated number of total and indebted farmer households in each size class of land is shown in following table. The size classes of land possessed considered were: <0.01 ha, 0.01-0.40 ha, 0.41-1.00 ha, 1.01-2.00 ha, 2.01-4.00 ha, 4.01-10.00 ha and more than 10.00 ha. The proportions of total farmer households in these seven classes were estimated as 1.4%, 32.8%, 31.7%, 18.0%, 10.5%, 4.8% and 0.9% respectively. The prevalence rates of indebtedness in these seven classes were 45.3%, 44.4%, 45.6%, 51.0%, 58.2%, 65.1% and 66.4%, i.e. in the different size classes of land possessed, 44% to 66% farmer households were indebted. On an average, out of 1000 indebted farmer households, the numbers in different size classes of land possessed were 13, 299, 298, 189, 125, 64 and 12 respectively. Thus, almost 80% of indebted farmer households possessed land amounting to 2 hectares or less.

Table 2.19

Estimated number of total and indebted farmer households in each size class of land possessed (All India)

Size class of land possessed	Estimated no. of farmer households	Percentage of farmer households	Estimated no. of indebted farmer households (00)	Percentage of indebted farmer households	Prevalence rate of indebtness (percentage)
<0.01	12594	1.4	5708	1.3	45.3
0.01-0.40	292867	32.8	130112	30.0	44.4
0.41-1.00	283610	31.7	129211	29.8	45.6
1.01-2.00	160600	18.0	81920	18.8	51.0
2.01-4.00	93504	10.5	54409	12.5	58.2
4.01-10.0	42581	4.8	27734	6.4	65.1
>10.00	7748	0.8	5148	1.2	66.4
All sizes	893504	100	434242	100.0	48.6

NSS Report No. 498: Indebtedness of Farmer Households, 2003

Here almost all section of farmers are indebted but as it is mentioned above that the source of loans for farmers having different size class of land is different and that is the major cause of stress in small farmers even that the prevalence of indebtness is less among small and marginal farmers as compare to large farmers.

It is a kind of vicious circle operating in less developed states. Less availability of credit influences adversely the adoption of modern technology and private capital investments, which in turn lowers the productive capacity of the agriculture sector and results in lower productivity and production and also pushes the farmers to borrow from non-institutional sources. Consequently, the demand for agriculture credit for short and long run purpose is dampened (Srijit Mishra 2005)

Rising cost of cultivation reason as mentioned above with fall in public expenditure resulted in low productivity added with this, declining trend in institutional credit to farmers compel them to move towards unauthorized moneylender who charges very high interest rates increased the vulnerability of farmers.

This globalization period is the phase that has been criticized very much by the Indian economists as far as agriculture is concerned. This was criticized at the starting of reforms and significant criticism came after Indian agriculture started experiencing suicides among the farmers across the states. It is argued that stress among farmers is the result of policies adopted in reform period in the light of globalization.

2.8 Suicides by Farmers

In most of the studies suicides by the farmers was undertaken as a parameter to show the stress in agricultural sector so it is necessary to analyze the data on suicide on all sectors.

Table 2.20

Growth rate of suicides and population in India

PERIOD	SUICIDE	POPULATION
1981-82 to 1990-91	6.3	2.01
1991-92 to 2000-01	3.2	1.89

Source: Accidental deaths and suicides in India, National crime record bureau

When we look annual growth rate of suicides in India we find that growth rate suicide has come down in 1990s to 3.2 percent as compare to 1980s when growth rate of suicide rate was 6.3 percent. This shows that globalization has decreased the stress in the economy but we can't conclude in this way, as suicides are not purely an economic phenomenon. So I have used the data of suicides according to profession to show that which sector is more affected by globalization in table 2.21.

Table 2.21

Suicide rate by profession

YEARS	SERVICES	BUSINESS AND PROFESSIONAL ACTIVITY	AGRICULTURE
1995	7.6	5.0	9.1
1996	11.9	7.57	14.2
1997	12.1	6.8	14.3
1998	13.4	8.4	16.5
1999	14.3	8.3	16.3
2000	10.64	7.58	16.57
2001	13.38	7.68	15.98
2002	12.5	8.19	17.11
2003			

Source: accidental deaths and suicides in India, National crime record bureau.

Above table gives a clear expression that suicide rate is high in agriculture sector as compare to other profession. On the one hand suicides as general phenomenon is falling in the economy and on the other hand suicide rate is rising in agriculture sector. But when we look at suicide data by profession we find that agriculture is the sector where suicide is rising more than as compare to other profession. It may be argued that suicide is purely a social phenomenon but for agriculture sector it may not the case.

When we look at the suicide data by profession we find the suicide rate is greater in agriculture sector than in other professions in the period of 1995-2005 this shows that agriculture is the worst affected sector in the country by globalization. Suicide rate in agriculture are higher than national average over the same period. But when we look at these suicides in agriculture sector across the states we find that these suicides are taking place in certain states only.

Suicides are rising in India as we had seen in table given above but when we look at suicides in agriculture we find that they were rising in specific belts in Andhra pradesh

and Maharashtra and were concentrated in cotton cultivators as several studies has shown. Maharashtra Gujarat and Andhra pradesh constitutes 65 percent of the cotton production but when we look at suicide data and various studies we find that there were no case or very few case of suicides among cotton cultivators in Gujarat while cotton cultivators are doing suicides in slots in Maharashtra and Andhra pradesh.

The whole gamut of factors behind stress in Indian farmers can be summed up as the changed pattern of land holdings (result of land reforms), changed cropping pattern, shift from food crops to cash crops, irregularity in the rainfall, declining public investment in agriculture resulted in less irrigation facilities and underdeveloped infrastructure, rising cost of cultivation because of increasing use of costly genetically modified seeds low productivity. With rising cost of cultivation, farmers are facing the shortage of capital. This problem is further accentuated by inadequate institutional credit, which is result of shrinking agriculture credit after liberalisation. Agricultural credit has been significantly declined after the liberalisation and this availability of credit influence the farmers adversely and dragged them into vicious circle of indebt ness as it pushes the farmers to borrow from non-institutional sources. Apart from this problem there are several interlinkages between credit and output market that bind the farmers to solely depend moneylender for their credit. These interlined transactions takes places because lenders are engaged in marketing of agricultural inputs, consumer goods and agricultural output along with money lending. And these moneylenders charges high interest rate, which lies between 18-36 per cent and that, is frustrating to the farmers.

CHAPTER 3

FARMERS IN GUJARAT AND MAHARASHTRA

CHAPTER 3

Farmers in Gujarat and Maharashtra

To set the discussion on the impact of reforms in perspective, it is useful to begin with a brief overview of the long-term trends in the agricultural sector in Gujarat and Maharashtra. In Gujarat growth rate of state domestic product (SDP) remained stable at 4.6 percent in 1980s and raised to 6.6 percent in the last decade (1991-00) (Niti Mehta, 2006)[1] while maharashtra registered 5 percent growth rate during liberalization period (Economic survey Maharashtra 2005-06). The share of agriculture in Gujarat, the major constituent of the primary sector, has steadily declined from 45.2 percent in 1970-71 to 13.4 percent in 2000-01 (Niti Mehta, 2006) while in maharashtra it declined to 14 percent in 2001-02 from 40 percent in 1970 (Srijit Mishra, Suicide of Farmers in maharashtra, 2006)[2].

In 2001 52 percent of the total workforce was engaged in agriculture sector, and 13 percent of the state domestic product was originating from it. In 2003, 73.30 percent of the rural holdings were marginal in Gujarat as compare to 69 percent of holdings in Maharashtra (SAS)[3]. Of the net cropped area 27.3 percent was irrigated in 1994, by 2003 the magnitude increased to nearly 32.69 percent in Gujarat (Niti Mehta, 2006) while irrigated area in Maharashtra was 16 percent in 2005-06. Irrigation through dug wells and tube wells accounted for as much as 88 percent of all the sources combined in 2001-03 in Gujarat. There is a decline in the share of cereals and foodgrains, giving way to non-foodgrain crops as oilseeds, spices, horticultural crops etc. or the non-traditional, nonfood crops. Gujarat and Maharashtra are predominantly a non-food crop economy with preponderance of groundnut, tobacco and cotton. In the recent decade, commercial

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[1] Niti Mehta, Performance of Agriculture in Gujarat: Some Recent Evidence, Paper presented at the National Seminar on Agricultural Growth in the Post Reform Period: Regional Perspectives, March 27-28, 2006 at Giri Institute of Development Studies, Lucknow, India.

[2] Srijit Mishra, Suicide of Farmers in maharashtra, Indira Gandhi institute of Development Research, Mumbai, 26 January, 2006

[3] Situation assessment survey of farmers, NSSO, 2003

orientation is more associated with oilseeds, sugarcane, vegetables, spices etc. Area under cereals such as rice, wheat, bajra and jowar has decreased in both states.

3.1 Trend in state domestic product

In table 3.1 we can see that in both states income (at both current and constant price) was rising at higher rate in globalization period as compare to previous decade. Both the states experienced almost same growth rate prior and after liberalization. In Gujarat growth rate of state domestic product (at constant price) was 7.79 percent in globalization period while it was 7.14 percent in Maharashtra for the same period.

Table 3.1
Growth rate of state domestic product in 80s and 90s

PERIOD	GUJARAT		MAHARASHTRA	
	AT CURRENT PRICE	AT CONSTANT PRICE	AT CURRENT PRICE	AT CONSTANT PRICE
1980-81 to 1990-91	11.63	4.39	11.82	4.61
1991-92 to 1998-99	16.78	7.79	15.79	7.14

Source: handbook of statistics on Indian economy, 2005-06, RBI

As we have seen in previous chapter that share of agriculture sector was experiencing declining trend in GDP at national level, same trend can be observed in both states in table 3.2, as share of agriculture declined to 19.70 percent in 2001-02 from 24.25 percent in 1993-94 in Gujarat and 17.20 percent in 2001-02 from 20.70 percent in 1993-94. in maharashtra share of Industrial sector also experienced slowdown while share of service sector increased in both states. Growth rate in agriculture sector was the lowest as compare to other sectors in both states.

Table 3.2

Share of agriculture, industry and service

	GUJARAT			MAHARASHTRA		
Sector	Agriculture	Industry	Service	Agriculture	Industry	Service
1993-94	24.25	30.89	44.85	20.70	26.44	52.85
2001-02	19.70	28.33	57.96	17.20	20.68	62.11
Growth rate (current price) 1990-2001	5.4	9.59	12.47	5.52	5.88	12.68
Growth rate at (constant price) 1990-2001	0.97	5.4	7.7	1.2	1.23	7.01

Source: Handbook of Statistics on Indian Economy, 2005-06, RBI

3.2 Cropping pattern in Gujarat and Maharashtra

Area under major crops in pre-globalized era (i.e. up to early 1990s) and post globalization period (TE 1999-00) are depicted in Table 3.3 for both states.

In Gujarat Area under Jowar and Bajra was declining continuously in consecutive three sub periods from 821 thousand hectare in triennium ending 1990-91 to 339 thousand hectare in TE 1999-00. Decline was the sharp for jowar after liberalization. Area under total rice, maize, oilseeds, sugarcane and groundnut increased soon after liberalization however rice maize and sugarcane were able to make rise in the area in subsequent periods while rest of them like oilseeds and groundnut experienced fall in the later part of the liberalization. This shows that liberalization increased the pace of commercialization in agriculture as area under commercial crops increased in Gujarat except oilseeds, as area under this crop had not increased in subsequent period.

In Maharashtra soon after liberalization, crops that experienced increase in area are rice, jowar, maize, pulses, sugar and cotton. Among them the sharpest increase was experienced by rice and jowar as their area increases from 1102 thousand hectare in TE 1990-91 to 1562 thousand hectare in TE 1995-96, almost 40 percent increase and from 5060 thousand hectare TE 1990-91 to 5759 thousand hectare TE 1995-96 respectively. Among these crops that experienced fall in subsequent period is jowar while area under rice remained same.

Crops that experienced fall after liberalization in area are wheat, bajra and oilseeds. Among these crops wheat and oilseeds make comeback and area under these crops increased in subsequent period while area under bajra remained stagnant. So effectively crops that experienced fall in area are coarse cereals. In both states area under cotton cultivation increased very much as compare to other commercial crops.

Table 3.3

Cropping pattern in Maharashtra and Gujarat

	Maharashtra			Gujarat		
CROP	TE 1990-91	TE 1995-96	TE 1999-00	TE 1990-91	TE 1995-96	TE 1999-00
Rice	1102	1562	1492	610	711	735
Wheat	864	776	937	564	639	617
Jowar	5060	5759	5155	821	547	339
Bajra	1943	1766	1722	1471	1369	1227
Maize	102	201	264	344	400	440
Pulses	3295	3471	3460	920	896	860
Oilseeds	2769	1934	2696	2728	3240	2892
Sugar	405	467	527	115	200	241
Kapas/Cotton	2659	2777	3197	1302	1940	1856

Source: Derived from www.indiastat.com
TE 1990-91 - Period from 1987-88 to 1990-91
TE 1995-96 – Period from1992-93 to 1995-96
TE 1999-00 – Period from 1996-97 to 1999-00

3.3 Input structure in Gujarat and Maharashtra

In the following table 3.4 we can see that irrigated area under different crops was very low in maharashtra as compare to Gujarat prior liberalization and this remained same even after ten years of liberalization so this may be major cause of less productivity and overall stress among farmers in agriculture sector in maharashtra. And difference in irrigated area under cotton is very large in Maharashtra and Gujarat as almost 1337

thousand hectare was irrigated in Maharashtra in TE 2000 while it was 31392 thousand hectare in Gujarat during the same period.

Table 3.4
Percentage area under irrigation of major crops

YEAR	RICE	WHEAT	JOWAR	BAJRA	GROUNDNUT	COTTON	SUGARCANE
MAHARASHTRA							
1991-93	3878	4624	4155	486	858	1003	3550
1998-99	4386	6627	5151	895	1685	1337	6112
GUJARAT							
1991-93	15724	6276	54851	19105	7423	27242	4533
1998-99	14769	7473	55003	16712	5324	31392	4603

Source: Derived from www.indiastat.com

3.4 Assessment of farmers in Gujarat and Maharashtra

3.4.1 Distribution of household and area owned

Area operated by marginal farmers in Maharashtra almost tripled in the period of study from 4.65 to 12.38 and this is nothing to do with globalization, as it does not show a drastic change in area operated by marginal holdings after liberalization. Small and semi medium farmers observed same trend. While opposite trend was observed by medium and large farmers as the area operated by them declined from 36.23 to 27.43 and from 27.40 to 11.78 in the period of study respectively for medium and large farmers.

Farmer holdings showed different trend from area operated by them. For marginal farmers, holdings as well as area operated by them showed increasing trend. Percentage of small householders remained same however area operated by them increased to 17.57 percent in 2003 from 10.90 percent in 1982. Semi medium house holdings also showed the same trend as area operated by them increased but holdings showed declining trend. Medium holdings also showed declining trend as percentage of medium holdings almost halved in the period of study but area operated by them remained more or less same. For large farmers both holding and area showed declining trend.

Table 3.5

Percentage distribution of households and area owned over five broad classes in Maharashtra for 2003, 1992, and 1982.

	PERCENTAGE OF HOUSEHOLDS						PERCENTAGE OF AREA OWNED				
Year	Marginal	Small	Semi-medium	Medium	Large	All	Marginal	Small	Semi-medium	Medium	Large
1982	54.89	14.96	14.83	11.83	3.50	100	4.65	10.90	20.82	36.23	27.40
1992	59.47	14.19	15.14	9.14	2.05	100	7.02	12.61	25.54	33.43	21.41
2003	69.00	13.10	12.00	5.10	0.80	100	12.38	17.57	30.88	27.35	11.78

Source: NSS Report No. 491: Household Ownership Holdings in India, 2003 (January–December 2003)

Farmers in Gujarat observed more or less same trend as the farmers observed in Maharashtra. Marginal holdings and area operated by them showed rising trend. Smallholdings experienced declining trend in globalization period while area operated by them experienced rising trend. Declining trend was also observed by medium and semi medium holdings while area operated by them does not show major shift in period of study. Large holdings and area operated by them both experienced declining trend.

Table 3.6

Percentage distribution of households and area owned over five broad classes in Gujarat for 2003, 1992, and 1982.

	PERCENTAGE OF HOUSEHOLDS						PERCENTAGE OF AREA OWNED				
Year	Marginal	Small	Semi-medium	Medium	Large	All	Marginal	Small	Semi-medium	Medium	Large
1982	57.25	13.61	14.98	11.45	2.70	100	6.66	10.78	22.63	39.45	20.49
1992	63.33	15.18	12.19	7.62	1.67	100	9.55	15.44	24.78	31.99	18.24
2003	73.30	11.90	7.20	6.50	1.00	100	13.60	16.05	18.96	39.12	12.28

Source: NSS Report No. 491: Household Ownership Holdings in India, 2003 (January–December 2003)

This whole phenomenon shows concentration of land in medium and semi medium farmers while transfer of land from large farmers to small and marginal farmers in both states. And this distribution of land cannot be the cause of suicides in Maharashtra as pattern of land distribution is almost same in both states.

3.4.2 Landless ness in both states

In table 3.1 given in appendix we can observe that landless households were declining in both states and also in India. At all India level percentage of landless households were 11.3 percent in 1982 and that proportion remained same till the starting of reform period but in liberalization period it fell to 10.0 percent that shows the shift of rural landless household to urban areas in search of employment. An entirely new trend of shifting non-farm activities and wholesale trade from rural to urban areas seems to be emerging trend in India in liberalization period[Bhalla 2000]*. Same trend was observe in both states as in Gujarat landless households were declined from 16.3 percent in 1992 to 13.6 percent in 2003 and in Maharashtra percentage was 19.6 and 17.7 respectively for the same period. However landlessness is high in Maharashtra as compare to Gujarat. (APPENDIX

3.4.3 Education among the farmers

In table 3.2 given in appendix we can see that there is no major difference in education level of farmers in both states. Percentage of illiterates is same in both states and one state is experiencing suicides and other does not explains that illiteracy or less education cannot be blamed for suicides in Maharashtra. And in report on suicide of farmers in Maharashtra, submitted by Tata institute of social sciences to the Mumbai high court found that 19 percent of the farmers who committed suicides were illiterate as compare to 81 percent literate. This high percentage of literate doing suicide that is even higher than the national average of 67 percent shows that illiteracy cant be the reason behind suicides in Maharashtra.

3.4.4 Average monthly income of farmers

We can see in above table that average monthly income of the farmer household in Maharashtra (Rs. 2463) is less than average monthly income of farmer household in Gujarat (Rs. 2684). From the table given below we can conclude that cultivation is the

* Bhalla, S. (1991): 'Report of the Study Group in Employment Generation' in Report of the National Commission on Rural Labour, Vol 11, Government of India, New Delhi.

most important source of income of farmers in rural India as average monthly income per farmer household from cultivation was Rs. 969 while from wages it was Rs.819. In Gujarat 43.36 percent of the farmers' income source was cultivation and in Maharashtra 51.27 percent of the income was coming from cultivation. Wages constitute 34.46 percent of income in Gujarat while in Maharashtra it constitutes 32.24 percent. But when we look at income from farming of animals we find that in Gujarat 17 percent of income was coming from this source while in maharashtra it was 5.8 percent. Income from non-farm business was 5.2 percent in Gujarat and 10.43 percent in Maharashtra. So it can be concluded that income source of farmers in Gujarat is more diversified than income source of farmers in maharashtra.

Table 3.7

Average monthly income (excl. rent, interest, dividend etc.) per farmer household by source in both States during the agricultural year 2002-03

STATES	WAGES	CULTIVATION	FARMING OF ANIMALS	NON FARM BUSINESS	TOTAL
Gujarat	925	1164	455	140	2684
Maharashtra	799	1263	144	257	2463
All India	819	969	91	236	2115

Source: NSS Report No 497: Income expenditure and productive assets of farmer household, 2003

3.4.5 Average monthly income of farmers according to size class of land holding

Farmers who possessed 0-0.4 hectare land are marginal farmers, farmers with 0.4-1 hectare land are small farmers, farmers with 1-4 hectare land are semi medium, farmers with 4-10 hectare of land are medium and farmers with land above 10 hectare are large farmers.

In table 3.3 in appendix it is shown that main source of income for the marginal farmers is wage while for small farmers income from wages is 40 percent and from cultivation it is 33 percent of the total income in Gujarat. There income from farming of application is 21 percent of total income. Medium farmers are more dependent on

cultivation as they were getting 68 percent of income from cultivation. Medium farmers were getting 73 percent of their income from cultivation. For large farmers it is 96 percent.

In Maharashtra marginal farmers are more dependent on cultivation as 21.19 percent of the income is coming from cultivation however there major source of income is wage income. Small farmers are also dependent more on wage income as compare to income from cultivation. Semi medium and medium farmers are getting around 70 percent of income from cultivation. Large farmers are getting 82 percent of income from cultivation. (Table 3.4 appendixes)

So it can be concluded wage is the major source of income small and marginal farmers and cultivation is the major source of income for large and medium farmers in both the states. But inter state comparison shows that small farmers are more dependent on cultivation in maharashtra as compare to their counterparts in Gujarat so they can be easily trapped in vicious circle of indebtness when monsoon fails.

3.4.6 Income and consumption by the farmers in both states

In table 3.8 we can see the comparison of farmers in both states by their income and expenditure. And results are not different from expectation. Farmers who had land less than 0.40 hectares or the small and marginal farmers, their average monthly income was very less as compare to their expenditures in both states. In Gujarat the average monthly income of the farmers those had land less than 0.01 hectares was 1872 but there average monthly consumption expenditure was Rs.2635. in Maharashtra for the same farmers income was very less as compare to their counterparts in Gujarat that is Rs.1191 but there expenditure is more or less same i.e. Rs 2400. for small ans marginal farmers also expenditure was greater then their income. For rest of the farmers in both states average monthly income is higher is more than their expenditure. So it can be concluded that small and marginal farmers in both states are in vulnerable situation and vulnerability of the small and marginal farmers in Maharashtra is more as compre to their counter parts in Gujarat.

Table3.8

Average monthly income from wages, farm business and non- farm business and average monthly consumption expenditure per farmer household by size class of land possessed during the agricultural year 2002-03

	GUJARAT			MAHARASHTRA			ALL INDIA	
Size class of land	Monthly income	Monthly consumption	Difference	Monthly income	Monthly consumption	Difference	Monthly income	Monthly consumption
<0.01	1872	2635		1191	2396		1380	2297
0.01-0.40	1864	2722		1798	2427		1633	2390
0.41-1.00	2030	2803		2139	2553		1809	2672
1.01-2.00	2815	3386		2183	2583		2493	3148
2.01-4.00	3757	3698		3525	3026		3589	3685
4.01-10.00	6355	4687		6244	3877		5681	4626
>10.00	5084	4391		15653	7241		9667	6418
All sizes	2684	3127		2463	2689		2115	2770

Source: NSS Report No 497: Income expenditure and productive assets of farmer household, 2003
NSS Report No.495: Consumption Expenditure of Farmer Households, 2003

3.4.7 Composition of average expenses

In following table 3.9 it can be seen that farmers in both states were spending more or less same proportion expenditure on purchasing of seeds and pesticides across the different sizes of land. But the major difference in expenditure of the both states is that farmers across the size of land in Maharashtra were spending quarter of their spending on fertilizer consumption while in Gujarat farmers were concentrating more on irrigation. And this can be seen in above table, as expenditure on fertilizer was 21.27 percentage of total expenditure in Gujarat and 26.31 percentage of the total expenditure in Maharashtra. So we can see that farmers in Maharashtra were spending comparatively more on fertilizers as compare to their counterparts in Gujarat. Proportion of Expenditure on irrigation is higher in Gujarat (14) nearly double as compare to Maharashtra (7).

Table 3.9

Percentage composition of average expenses for cultivation per farmer household during the agricultural year July 2002 to June 2003

STATE	SEEDS	PESTICIDES& INSECTICIDE	FERTILIZER/MANURE	IRRIGATION	INTEREST
Gujarat	19	9	21	14	2
Maharashtra	19	8	26	7	2
All India	16	7	23	12	1

Source: NSS Report No 497: Income expenditure and productive assets of farmer household, 2003

3.4.8 Productive assets for farm business

In table 3.10 we can see that Maharashtra had more of cattle, poultry/duckery and minor implements as compare to Gujarat. But on the other hand Gujarat were rich in buffalo, sheep, goats and tractors. But when we look at productive assets possession across the farmers according to their **possession of land** we find different results.

Table 3.10

Average number of productive assets for farm business possessed per 100 farmers Households at all India level

STATES	CATTLE^	BUFFALO	SHEEP, GOATS*	POULTRY/ DUCKERY	MINOR IMPLEMENTS #	TRACTORS
Gujarat	124	121	89	38	824	3.1
Maharashtra	141	47	76	82	673	1.3
All India	129	68	83	107	633	3

^Cow, bullock and calves *includes pigs and rabbits #sickles chaff –cutters, axes, spades and choppers

Source: NSS Report No 497: Income expenditure and productive assets of farmer household, 2003

3.4.9 Percentage of productive assets by farmer households by size class of land possessed

In the above table we can see that marginal farmers possess very less productive assets in Gujarat. Sheep and goat form half of the productive assets for marginal farmers and same is the case is with farmers in maharashtra as there farmers possess the same

proportion of their assets in the form of sheep and goat. When we look at the possession of tractors across the farmers by possession of land we find that in both states about 70 percent of the tractors were in possession of large farmers or those farmers that have land more than 10 acres But when we look at the possession of assets in Maharashtra we found very uneven distribution of productive assets across the farmers by possession of land as medium farmers had less productive assets as compare to medium farmers in Gujarat. Poultry and duckery is the asset that is evenly distributed in Maharashtra. So as given in above table that 17 percent of the income was coming from animals in Gujarat and this assets are evenly distributed across the farmer we can conclude that farmers in Gujarat has good alternate source of income. But this not true in case of farmers in maharashtra as only 5.8 percent of the income was coming from farming of animals and even that income is very unevenly distributed among the farmers. So farmers in Maharashtra are more vulnerable to fluctuation in monsoon than farmers in Gujarat. (Table 3.5 in appendixes)

3.4.10 Indebt ness among the farmers in Gujarat and Maharashtra

At all-India level, estimated number of rural households was 147.90 million, of whom 60.4% were farmer households. Out of 89.35 million farmer households, 43.42 million (48.6%) were reported to be **indebted.** Estimated prevalence of indebtedness among farmer households was highest in Andhra Pradesh (82.0%). Going by principal source of income, 57% farmer households were cultivators. Among them 48% were indebted. Households with 1 hectare or less land accounted for 66% of all farmer households. About 45% of them were indebted. The most important source of loan in terms of percentage of outstanding loan amount was banks (36%), followed by moneylenders (26%). In above table 54.8 percent of the farmers are indebted as compare to 51.9 percent of the farmers in Gujarat.

Table 3.11

Estimated number of rural households, and total and indebted farmer households in Maharashtra and Gujarat State

STATE	ESTIMATED NO. OF RURAL HOUSEHOLD ('00)	ESTIMATED NO. OF FARMER HOUSEHOLD ('00)	ESTIMATED NO. OF INDEBTED FARMER HOUSEHOLD ('00)	PERCENTAGE OF FARMER HOUSEHOLDS INDEBTED
Gujarat	63015	37845	19644	51.9
Maharashtra	118177	65817	36098	54.8
All India	1478988	893504	434242	48.6

Source: NSS Report No. 498: Indebtedness of Farmer Households, 2003

3.4.11 Indebtedness of farmer households by size class of land possessed

Present estimated number of total and indebted farmer households in each size class of land is shown in following table. The size classes of land possessed considered were: <0.01 ha, 0.01-0.40 ha, 0.41-1.00 ha, 1.01-2.00 ha, 2.01-4.00 ha, 4.01-10.00 ha and more than 10.00 ha. The proportions of total farmer households in these seven classes were estimated as 1.4%, 32.8%, 31.7%, 18.0%, 10.5%, 4.8% and 0.9% respectively. The prevalence rates of indebtedness in these seven classes were 45.3%, 44.4%, 45.6%, 51.0%, 58.2%, 65.1% and 66.4%, i.e. in the different size classes of land possessed, 44% to 66% farmer households were indebted. On an average, out of 1000 indebted farmer households, the numbers in different size classes of land possessed were 13, 299, 298, 189, 125, 64 and 12 respectively. Thus, almost 80% of indebted farmer households possessed land amounting to 2 hectares or less. (table 3.6 (A) in appendixes)

Indebtedness of farmer households by size class of land possessed in Gujarat

The size classes of land possessed considered were: <0.01 ha, 0.01-0.40 ha, 0.41-1.00 ha, 1.01-2.00 ha, 2.01-4.00 ha, 4.01-10.00 ha and more than 10.00 ha. The proportions of total farmer households in these seven classes were estimated as 5.93,

20.98, 29.06, 20.14, 13.31, 9.64 and 0.91 respectively. The prevalence rates of indebtedness in these seven classes were40.3, 39.8, 44.6, 56.0, 71.2, 71.2, and 62.6, i.e. in the different size classes of land possessed, 40% to 71% farmer households were indebted. On an average, out of 1000 indebted farmer households, the numbers in different size classes of land possessed were 46, 161, 250, 217, 182, 132 and 11 respectively. Thus, almost 65% of indebted farmer households possessed land amounting to 2 hectares or less. (Table 3.6 (B) in appendices)

Indebtedness of farmer households by size class of land possessed in Maharashta

The size classes of land possessed considered were: <0.01 ha, 0.01-0.40 ha, 0.41-1.00 ha, 1.01-2.00 ha, 2.01-4.00 ha, 4.01-10.00 ha and more than 10.00 ha. The proportions of total farmer households in these seven classes were estimated as 1.1%, 15.48%, 27.76%, 26.02%, 19.16%, 9.24% and 1.51% respectively. The prevalence rates of indebtedness in these seven classes were35.6%, 40.3%, 47.6%, 55.1%, 66.7%, 72.5% and 85.9%, i.e. in the different size classes of land possessed, 36% to 86% farmer households were indebted. On an average, out of 1000 indebted farmer households, the numbers in different size classes of land possessed were7, 112, 241, 261, 233, 122 and 23 respectively. Thus, almost 80% of indebted farmer households possessed land amounting to 2 hectares or less.

3.4.12 Purpose of loan

It is observed that the two most important purposes of taking loan were 'capital expenditure in farm business' and 'current expenditure in farm business'. At all-India level, out of every 1000 rupees taken as loan, 584 rupees had been borrowed for these two purposes taken together. In Gujarat 50 percent of the total amount of loan was borrowed for current expenditure in farm business while it was 37.5 percent in Maharashtra. The next important purpose was 'marriages and ceremonies'.

Table 3.12

Per 1000 rupees distribution of outstanding loan taken by farmer households in different States by purpose of loan

STATE	CAPITAL EXPENDITURE IN FARM BUSINESS	CURRENT EXPENDITURE IN FARM BUSINESS	NON FARM BUSINESS	CONSU-MPTION EXPEND-ITURE	MARRIAGES AND CEREMONIES	EDUC-ATION	MEDICAL EXPEN	OTHER	ALL
Gujarat	203	503	39	43	102	5	30	56	1000
Maharashtra	379	375	48	42	49	9	15	83	1000
All India	306	278	67	88	111	8	33	108	1000

Source: NSS Report No. 498: Indebtedness of Farmer Households, 2003

3.4.13 Purpose of loan for each size class of land

When we look at the purpose of loan taken by the farmer according to size class of land we find that at all India level marginal farmers were involved in loans for consumption expenditure and marriages ceremonies and these components constitute 21.2 and 22.4 percent of their total loan. As the size class of the land increases pattern of loan changes as large and medium farmers take loan for capital expenditure and current expenditure in farm business. For capital expenditure and current expenditure in farm business large farmers were taking loan about 45.7 percent and 32.5 percent while this percentage for medium farmers were 41.1 and 40. Problem is small farmers and among them especially with those farmers who had land around 1.00 to 2.00 hectare as they took loan for capital and capital expenditure in farm business around 33 and 32 percent as they are at the receiving end of all stress if monsoon fails. Problem is same with the farmers who had land around 0.4 to 1.0 hectare.

Situation is not different in both states as it follows the same trend as at all India level. Marginal farmers take loan for marriages and ceremonies (35%) while this is 44 percent for small farmers. Here also as land size increases farmers become more oriented towards taking loan for the purpose of capital and current expenditure in farming. Here in Gujarat large and medium farmers take loan mostly for current expenditure in farming as they take around 57.5 and 72.8 percent for this purpose respectively. Maharashtra followed the same trend. (Table 3.7 in appendixes)

3.4.14 Source of loan

It is observed that two most important sources of loan were 'bank' and 'agricultural/professional money lenders', at All India level. On an average, if 1000 rupees were lent to farmers, then the shares of the above two sources were 356 and 257 rupees respectively. The next important source was 'co-operative society'. But this is not the case with Gujarat and Maharashtra. Bank were playing important role in credit to farmers in Gujarat and Maharashtra as 27.2 percent and 34.1 percent of the total loan was coming from banks respectively however Moneylenders are not so active in these two states as this source constitutes only 6.5 percent and 6.8 percent in Gujarat and Maharashtra respectively. Major source of credit in both states was loans from cooperative societies, which is different phenomenon as observed at all India level.

When we look at the source of loan for each size class of land possessed in India we find that compare to the national average of 25.7 percent of the dependence of farmers on money lenders this source of loan is more prevalent among marginal and small farmers as it constitute 47.3 percent and 31.8 percent respectively for these farmers. While banks and cooperative societies are less prevalent among marginal and small farmers as compare to large farmers and same trend can be observed in case of cooperative societies. Relatives are major source of loan for marginal and small farmers here.

Table 3.13

Per 1000 rupees distribution of outstanding loan taken by farmer households by source of loan

STATE	GOVT.	CO-OP SOCIETY	BANK	AGRI./PROFESSIONAL MONEY LENDER	TRADER	RELATIVE	DOCTOR, LAWYER ETC.	OTHER	ALL
Gujarat	5	418	272	65	44	177	9	10	1000
Maharashtra	12	485	341	68	8	59	3	24	1000
All India	25	196	356	257	52	85	9	21	1000

Source: NSS Report No. 498: Indebtedness of Farmer Households, 2003

3.4.15 Source of loan for each size class of land possessed in Gujarat and Maharashtra

Here in Gujarat and Maharashtra contrary to their state average, marginal farmers are more dependent on moneylenders as this source constitutes 13.7 percent and 19.4 percent respectively for both states. Moneylenders are more famous among small and medium farmers in Gujarat as it constitute 11 and 20 percent as compare to 4.5 and 9.7 percent in Maharashtra. So marginal farmers are more dependent on moneylenders in both states Maharashtra and Gujarat while small and medium farmers are more dependent on this source in Gujarat.

In Gujarat marginal farmers are mostly depend on their relatives (64.6) for their credit need. In Gujarat this source of credit is more prevalent among all farmers as compare to farmers in Maharashtra.

When it comes to loan from banks we find that this source is more prevalent among marginal farmers of Maharashtra. In Maharashtra this source of loan constitute 38 percent for marginal farmers as compare to 6.7 percent in Gujarat while for rest of the farmers almost same trend is observed in both states.

When we look at cooperative societies we find this source of credit is prevalent in all farmers in Maharashtra as compare to Gujarat where it is more prevalent among medium and large farmers. Small and marginal farmers are less dependent on this source of credit in Gujarat.

3.4.16 Average amount of outstanding loan per farmer household by size class of land possessed

Almost same trend is observed for both states as size class of land increases the amount of outstanding loan also increases. This rising trend has similarity but when we look at the amount of loan among different sizes of land in both states we find that except medium farmers this amount is big in Maharashtra as compare to Gujarat for all size classes of land. For marginal farmers it is almost double (Rs. 8374) in Maharashtra as compare to Gujarat (Rs.4529). So this amount of indebtness may be one of the causes of high rate of suicide in Maharashtra.

Table14

Average amount of outstanding loan per farmer household by size class of land possessed

STATES	<0.01	0.01-0.40	0.41-1.00	1.01-2.00	2.01-4.00	4.01-10.00	>10.00	ALL SIZES	ESTD. (00)	PERCENTAGE OF HH
Gujarat	4529	7343	6584	11976	30169	47718	84326	15526	19644	51.9
Maharashtra	8374	6848	8914	15890	18901	40038	125913	16973	36098	54.8
All India	6121	6545	8623	13762	23456	42532	76232	12585	434242	48.6

NSS Report No. 498: Indebtedness of Farmer Households, 2003

3.4.17 Role of information among farmers of access to technology and stress

In the following table we can see that 40 percent of the farmers were getting information for modern technology. Even among them there is difference in source of information. At all India level 16.7 percent of the farmers were getting information from other progressive farmers, 13.1 percent from input dealers and 13.0 percent from Radio. As study is focused on Gujarat and Maharashtra we can see from the following table that there is very much difference in source of information farmers are using in both states. In Gujarat most of the farmers were getting information from input dealers, other progressive farmers and extension workers while in Maharashtra farmers were dependent on electronic and print media. As a whole farmers of maharshtra are less informed as compare to farmers of Gujarat.

3.4.18 Crop insurance

In India only 96 percent of the farmers are uninsured. This shows the negligence of the government towards agriculture sector. However this percentage is high in Gujarat and Maharashtra.

In Maharashtra more farmers are uninsured as compare to Gujarat, as almost 90 percent of the farmers are uninsured in Maharashtra as compare to 80 percent in Gujarat. Almost 63 percent of the farmers are unaware of crop insurance as compare 48 percent in Gujarat.

CHAPTER 4

COTTON SECTOR IN INDIA AND STRESS IN COTTON FARMERS

CHAPTER 4

Cotton Sector in India and stress in cotton farmers

India is the third largest producer of cotton in the world after China and USA (177 Lakh bales in 2003-2004). Production of cotton has increased from 2057 million kilograms (12.1 million bales of 170 kg each) in 1993-94 to 4182 million kilograms (24.6 million bales of 170 kg each) in 2004-05. India is the largest cotton growing country in the world with 9.1 million hectares planted to cotton in 2005-06 but India's yield rate is still low as productivity remained lowest in the world around the levels 300 – 310 Kg/Hectare. All varieties of cotton short, medium, medium long and extra long staple cotton are grown in India. Till 2004-05 the Indian crop is the third largest in the world whose value is an estimated 4.5 billion in US Dollars. Only one third of cotton area is under irrigation. Livelihood to 60 million people engaged in farming, industry and trade related to cotton and cotton by products.() Cotton is widely grown all over India. AP, Gujarat, Maharshtra, Madhya Pradesh, Punjab, Haryana, Rajasthan, Tamil Nadu and Karnataka are the main cotton growing regions.

Although cotton is produced in over 60 countries in the world, only five of them, China (Mainland), India, Pakistan, USA and Uzbekistan, share 75% of production, 71% of area and 70% of consumption. The five large producers have been the same for decades, though production and consumption have shifted a lot among them. The most significant changes have been reduced consumption in the USA, expanded production and use in China (Mainland), high local consumption in Pakistan (ICAC, 2006). World cotton area surpassed 36 million hectares in 1995-96 (the highest since 1951-52), after prices averaged 94 cents per pound in 1994-95, and fell below 30 million hectares in 2002-03 (the lowest since 1950-51), after the prices averaged 42 cents per pound in 2005-06 during the previous season. Year to year fluctuations in yields have been a significant factor for volatility of cotton prices during recent seasons. The world yield stagnated below 600 kilograms per hectare during the 1990s before climbing to a record of 645 kilograms per hectare in 2002-03.

4.1 Long Term Production Performance

Production of cotton was increasing consistently up to 1990. But in 1990s production fell to 9.38 lakh bales from 10.32 lakh bales. If we look at growth rate, it was 3.28 percent in 80s that became negative in 90s. So production as well as growth rate of production decreased in globalisation period however production was greater than the previous periods.

Table 4.1

Long-term production performance

YEAR	AVERAGE PRODUCTION DURING THE TRIENNIUM ENDING FOR WHICH MIDDLE YEAR IS GIVEN	GROWTH RATE BETWEEN TWO POINTS
	In lakh bales of 170 kg	Percentage
1950	3.22	
1960	5.33	5.17
1970	5.82	0.88
1980	7.47	2.54
1990	10.32	3.28
2000	9.38	-0.95

Source- Cotton Advisory Board

4.2 Cotton in globalisation period

4.2.1 Fluctuations in Production in globalize era

In the following table we can see the impact of globalization on area under cotton cultivation as index of area jumped to 123 in 1995-96 from 108 in 1994-95 as cotton imports were liberalized in 1994 and this increase in area can be attributed to shift of small farmers from the cultivation of coarse cereal to cotton cultivation that I have explained in further sections. So increase in cotton production can be attributed to increase in area. But we can see in the table that after 1998 area as well as production

started falling. Reason as it is clear from the table is, the fall in cotton prices in international market that increased the imports and simultaneously procurement by government agencies fell and both these factors worked as disincentive for the farmers.

Table 4.2

Cotton Balance Sheet

YEAR	AREA INDEX	PRODUCTION INDEX	YIELD INDEX	COT LOOK A INDEX	PRICES INDEX	EXPORT	IMPORT
1990-91	102	114	121	201	59	100	0
1991-92	105	113	116	153	97	6	100
1992-93	103	132	138	140	89	116	38.3
1993-94	100	125	134	171	100	33	100
1994-95	108	138	138	229	154	9	196
1995-96	123	149	130	208	159	67	17
1996-97	125	165	142	191	133	141	10
1997-98	121	126	112	175	155	29	133
1998-99	128	143	120	143	167	8	262
1999-00	119	134	121	128	147	5	734
2000-01	117	110	102	139	157	5	738
2001-02	125	116	100	100	149	4	842
2002-03	105	100	103	135	142	7	589
2003-04	104	161	166	168	181	76	300

Source: Cotton Advisory Board

1.0.0 Trade in globalize era

- **Import Policy**

Cotton imports were liberalised in 1991, when the import monopoly of the Cotton Corporation of India was terminated and private traders placed imports on Open General License, allowing unrestricted imports. The import duty was originally set at zero, but little import trade occurred until the late 1990s, when world prices declined and India faced domestic supply shortfalls. The import duty was raised to 5.5 percent in 2000.

Custom Duty and Bound Rates: Like all developing countries, India's agricultural tariffs rates were very high for most commodities ranging from 100 to 300 per cent prior to economic reforms. There were however a few commodities for which bound tariff was very low or even zero. Subsequent to the agreement to remove QR's, India was allowed to renegotiate its tariff bindings and bound many important commodities at rates ranging between 40 to 80 %. Agricultural tariffs in India also started coming down subsequent to the liberalization of the economy in 1991. The result is that the rates are now much lower than the UR bound rates for most commodities. For a few commodities, the rates are going to be quite high almost as high as the revised bound rates in 2001.

In above table we can notice that imports are highly responsive to prices in international market and the reason is clear behind rising imports in latter years as prices in international market were decreasing in the latter part of the 90s and imports started falling there after as prices in international market started rising. Prices were high in international market in the initial period so textile producers had to rely on domestic production in the initial period of liberalization and imports were low in that period.

- **Elimination of Export Quotas**

Until the elimination in 2002, India used annual cotton export quotas to limit exports and ensure low and stable raw material prices for the domestic textile industry. The quotas tended to suppress domestic cotton prices by restricting exports, and uncertainty regarding annual quota levels was a source of price risk for growers and traders. Earlier cotton exports from India were governed by the long-term cotton export policy of the Government, according to which 5 lakh bales of cotton used to be released in the beginning of the season. Subsequent export quotas were released in phases as the season progressed. The Government allowed Cotton export quota each year in favour of different Agencies such as Cotton Corporation of India (CCI), Maharashtra State Cotton Growing Marketing Federation (MSCGMF) etc. With a view to boosting trade in cotton, Govt. has since removed all restriction export of raw cotton vide notification-dated 2.07.2001 issued by the Director General Foreign Trade, New Delhi.

As far as exports are concerned there is no major trend observed that can be noticed except that exports were negligible in globalization period. It can be concluded that globalization did not help in raising export of as it was presumed before liberalization of agriculture sector. Several reasons has been mentioned by economists as low quality of Indian cotton mixed with various varieties of cotton high contamination and we cannot predict that just globalization will help in removing this problems with Indian cotton.

So production as well as exports in cotton sector is not responsive to price fluctuation in international market and this resulted in less or no exports of cotton even after liberalization when prices were high. Imports are price responsive in international market and this trend has increased the vulnerability of the farmers in cotton sector, as textile producer were made free to take the benefit of low international prices. In later section it is mentioned that procurement by government agencies also started declining in later part of the 90s and this further dampened the environment in cotton sector.

4.3 Regional location of production

It is clear from data in Table given below that Gujarat, Maharashtra, Andhra Pradesh are major cotton producing states. Almost 70 percent of the total area under cotton cultivation is in Maharashtra, Gujarat and Andhra Pradesh. These three states accounts for about 65 per cent of the total production in the country. In production Gujarat's performance is much better than any other states in India as it contributed almost 30 percent of the total cotton production. Maharashtra contributes 22 percent of the total production while Andhra Pradesh contributes 13.36 percent. The highest yield is reported in Punjab (559kg/ha) as the entire area is almost irrigated in the state. Area under cotton cultivation is 5.90 percent and 6.95 percent in Punjab and Haryana but cotton cultivation in those states is totally irrigated as 100 percent area is under irrigation. The yield of Maharashtra state is among the lowest in India recording only 189 kilogram per hectare, as the irrigated area (4%) is lowest among all the cotton producing states. In major cotton producing states highest yield is of Gujarat that is 418 kg/ha and 41 percent of the cotton cultivated area is irrigated the states. So it reflects that cotton cultivation in Maharashtra is totally rainfed and farmers have very few sources of irrigation. Farmers in Andhra Pradesh and Karnataka are facing the same problem of scarcity of irrigation sources as 20.1 percent and 14.7 percent of the cultivated area is irrigated respectively and for rest of the production they are dependent on monsoon. This has serious implication as cotton cultivation is capital-intensive crop and irrigation is very much a requirement in cotton cultivation.

The district-wise analysis of data brings out that 36 major cotton-producing districts falls in 6 states namely AP, Gujarat, Haryana, Maharashtra, Punjab and MP. These 36 districts, accounts for 80 percent of the country's total cotton production. Out of these 36 districts, 9 top districts namely Jalgaon (Maharasthra), West Nimar (Khargaon) (MP), Sirsa (Haryana), Surendrangar (Gujrat), Rajkot (Gujrat), Bhavnagar (Gujrat), Amreli (Gujrat), Vadoara (Gujrat) and Warngal (Gujrat) accounts for 42 per cent of the total kapas production in the country.

Table 4.3

Area, Production and Yield of Cotton

AREA, PRODUCTION AND YIELD OF COTTON DURING 2003-04 IN RESPECT OF MAJOR COTTON PRODUCING STATES ALONG WITH COVERAGE UNDER IRRIGATION						
	Area in Million Hectares, Production in Million bales of 170 kg each, yield in Kilogram/hectare					
State	Area	% Of the total	Production	% Of the total production	Yield	% Coverage Under irrigation During 2002-03*
Gujarat	1.64	21.49	4.03	29.06	417.7	41.1
Maharashtra	2.77	36.30	3.08	22.21	189.0	4.1
Andhra Pradesh	0.84	11.01	1.89	13.63	382.5	20.1
Punjab	0.45	5.90	1.48	10.67	559.1	99.6
Haryana	0.53	6.95	1.41	10.17	452.3	98.7
Rajasthan	0.34	4.46	0.71	5.12	355.0	95.0
Madhya Pradesh	0.59	7.73	0.66	4.76	190.2	31.2
Karnataka	0.31	4.06	0.32	2.31	175.5	14.7
Tamil Nadu	0.1	1.31	0.18	1.30	306.0	33.9
Others	0.06	0.79	0.11	0.79	311.7	-
All India	7.63	100.00	13.87	100.00	309.0	33.1

Source: Directorate of Economic & Statistics, Ministry of Agriculture & cotton advisory Board

4.4 Types of Cotton

Quality of cotton is mainly based on two important parameters- Staple length and Strength of the fiber. Staple length is generally classified into 5 categories such as Short Staple (SS), Medium Staple (MS), Medium Long Staple (MLS), Long Staple (LS) and Extra Long Staple Cotton (ELS). Quality strength of the cotton is usually denoted as G/Tex, (Gram Per Tex) and PSI. The other parameters, which determines the quality of cotton, are Micronaire (the fineness of the (fibre), Uniformity Ratio (consistency among the fibres), Colour grade and Maturity of the fibre.

The area under long staple length in total area increased from 40.8 in 1997-98 to 44.7% in 1999-00 at the cost of the medium staple length, which area decreased from 44.3% in 1997-98 to 39.8 % in 1999-00. The area under both, superior long and long increased between 1997-98 and 1999-00. The production of long staple increased from 44.3% of total production in 1997- 98 to 50.8% in 1998-99, but after that it fell to 44.3% in 1999-00. Within long staple, production of superior long decreased with increase in area so it indicates that there is fall in productivity. The production of long staple, however, increased with increase in area. In case of medium staple length, its share in total production decreased sharply from 43.4% in 1997-98 to 37.4 in 1998-99, but then it rose to 40.8 per cent in 1999-00. The production of short staple share increased from 12.1% to 14.8% in 1999-00.

Table 4.4

Staple-wise Estimates of Area and Production of Cotton (Area: Lakh Hectares, Production: Lakh Bales of 170 Kgs. each)

STAPLE LENGTH		Sub-total	Long % Share	Sub-total	Medium % share	Short (19mm & below)	Short % share	Total
Area	1999-00	38.9	44.7	34.7	39.8	13.5	15.5	87.1
Production	1999-00	51.1	44.3	47.1	40.8	17.1	14.8	115.3

Source: Agriculture Statistics at Glance, 2005

4.5 Seasonal and Irregular Fluctuations in Cotton Prices

Because the pattern of change in price of various varieties is more or less same so I have taken the J-34-RG variety to see the seasonality in the cotton prices. For seasonality I have created an index of prices, which take value equal to 100 for October price of each year.

There is seasonality in the price of J-34-RG variety of cotton. Price falls when crop comes into the market, i.e., in October and then after 3-4 month, it starts to rise, i.e., in march-April. Prices are also behaves in cyclical mode. The pattern described above changes after 2 year. After 2 year, price behaves badly for one year and there is rise in price level almost in all month. Because only 33 per cent of the total cultivated area is irrigated so rainfall is important for cotton but time is also equally important. Seasonality pattern has changed after 2001-02. After 2001-02, price of cotton has risen in 2002-03 and in 2003-04, price raised in October then fall marginally and then raise fluctuated with marginal gain and loss in entire crop year. In 2004-05, price was raised and then it starts to fall in December. After this decline, price again starts to rise after the March.

Here there is very fare chances of farmers being cheated by intermediaries as farmers stock there production when production comes to the market prices fall and farmers don't get there share. As it is mentioned in Hindu (newspaper) that there is a political nexus between traders and government as government start proclaiming huge production in the season when generally crop comes and that announcement has dampening impact on cotton market as prices fall. Farmers have to sell their production at low prices, as they have no alternatives and stock facility. Here concept of minimum support price plays important role that we see in further section.

Table 4.5

Seasonal variation in Cotton Prices

SEASONAL VARIATIONS IN COTTON PRICES OVER TIME FOR J-34-RG VARIETY OF COTTON OCTOBER TO SEPTEMBER COTTON SEASON INDEX ASSUMING OCTOBER 1990-91 PRICES AS 100 FOR EACH YEAR TO VARIATIONS IN PRICES IN MUMBAI MARKET OVER TIME													
Month /Year	1989 -90	1990 -91	1991- 92	1992- 93	1993-94	1994- 95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03
Oct		100	155	149	166	267	285	266	306	291	265	278	261	251
Nov		107	147	134	169	284	292	258	296	293	241	294	234	262
Dec		110	160	128	195	335	272	242	293	278	225	303	231	276
Jan	93	107	173	115	207	345	260	243	317	273	233		225	273
Feb	88	111	175	113	246	344	250	241	324	272	249		220	295
Mar	81	126	163	130	292	348	235	254	321	269	263		218	317
Apr	80	148	162	138	314	339	249	258	321	269	266		230	342
May	84	157	161	144	319	311	270	275	322	276	288		236	345
Jun	91	161	169	156	322	307	271	296	334	286	300		246	348
Jul	94	173	178	160	322	315	259	293	327	297	304		260	365
Aug	96	204	167	162	309	305	265	298	309	296	302		258	356
Sep	97	185	151	184	289	301	268	303	288	295	299		242	353

Source: Cotton Advisory Board

4.6 Government Intervention

4.6.1 Procurement

The farmers also sell to government agencies like the Cotton Corporation of India, the National body, which suppose to procure the kapas at the minimum support price. Because farmers are generally unorganised and don't have the bargaining power due to lack of storage facilities, the traders exploited them. Thus the farmers created Cotton Co-

operatives in many states like Shri Madhya Gujarat Co-operative Cotton Marketing Union (MGCCU) in Gujarat, etc. By cotton co-operatives they sell the kapas when there is good price. The credit requirement is very important especially for the kapas and due to inadequate availability of institutional credit, the local moneylender is important source of the credit for the farmers. But there also exists the inter-linkage between credit and output market i.e., the moneylender lends to the farmers on the condition that he will sell the entire crop at the fixed price, which are generally much lower than the market price. This highlights the traditional aspects of the cotton farmers and the existence of such inter-linkage market reduces the incentive to invest into farm sector by the farmer.

Thus the various state governments for the incentives of the farmers initiated the various procurement measures. However, this system got politicised in the long run and the Cotton Corporation of India, Maharashtra State Co-operative Cotton Growers Marketing Federation are the major source of distortion the cotton market now facing. These corporations are now running into loses into millions.

3.5.1 The Cotton Corporation of India

The Ministry of Commerce, Government of India in 1970, set up the Cotton Corporation of India, as a public sector agency. It was organised for handling of imports, purchasing domestic cotton to safeguard the interests of growers and consumers, imparting the needed stability to cotton prices in the long run and maintain the supplies to government and private textile mills.

The Cotton Corporation of India makes price support as well as commercial purchases to provide price support to the cotton growers except in Maharashtra. The purchases of cotton by CCI and Maharashtra State Co-operative Cotton Growers Marketing Federation (MSCCGMF) are shown in following table.

Table 4.6

Purchases of Cotton by CCI and MSCCGMF

'000 Bales of 170 kgs each

YEARINST	*1991-92*	*1992-93*	*1993-94*	*1994-95*	*1995-96*	*1996-97*	*1997-98*	*1998-99*	*1999-00*	*2000-01*	*2001-02*	*2002-03*	*2003-04*
CCI	1000	1187	754	843	1016	1120	812	430	482	603	967	396	574
MSCCGMF	1063	1961	1130	1100	2775	3127	118	N.A.	25	N.A.	N.A.	203	328

Note: NA= Not Available

Source- Agriculture Statistics at the Glance 2005, Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India.

In above table we can see that procurement by both agencies, which were showing rising trend started falling after 1996-97. Procurement by MSCCGMF, which was 10.63 lakh bales in 1991-92, 31.27 lakh bales in 1996-97 came down to 25000 bales in 1990-00 and it was 3.28 lakh bales in 2003-04. While procurement by CCI does not show such sharp decline but it can be said that procurement by this central agencies came down after 1996-97. The state-wise purchases of cotton by CCI and MSCCGMF during 1991-2003-04 are shown in following table.

In above table we can see that procurement by different government agencies started falling after 1996-97 as procurement in that year was 42.47 lakh bales which dropped to 19.30 lakh bales and never gained that level which was achieved 1996-97. When we look inter state comparison in procurement we find that procurement fall in almost all major cotton producing states except Gujarat. Procurement in Gujarat show constant trend however there was slight fall in procurement in 1997-98 (2.49 lakh bales) from 1996-97 (3.05 lakh bales).

Table 4.7

State-wise Purchases of Cotton during 1991-92 to 2003-04 (October to September)

('000 Bales of 170 kgs each)

Year	*Andhra Pradesh*	*Gujarat*	*Haryana*	*Karnataka*	*Madhya Pradesh*	*Punjab*	*Rajasthan*	*Tamil Nadu*	*Others*	*Maharashtra*	*Total*
1991-92	172	154	110	74	127	207	149	7	Neg.	1063	2063
1992-93	158	227	138	66	102	328	163	5	Neg.	1961	3148
1993-94	162	142	47	31	169	69	130	4	Neg.	1130	2106
1994-95	100	224	80	24	188	115	111	Neg.	1	1100	1943
1995-96	211	232	73	24	224	122	123	2	5	2775	3791
1996-97	178	305	86	52	232	105	156	3	3	3127	4247
1997-98	193	249	34	24	189	24	97	-	2	118	1930
1998-99	119	172	5	17	35	16	63	2	1	N.A.	430
1999-00	123	113	19	16	44	36	124	2	5	25	507
2000-01	180	127	34	15	62	62	117	1	5	N.A.	603
2001-02	468	236	10	90	63	13	67	Neg.	20	N.A.	967
2002-03	133	163	18	3	38	9	26	-	6	203	599
2003-04	185	231	11	9	26	24	84	-	4	328	902

Note: NA= Not Available

Neg = Negligible

Source- Agriculture Statistics at the Glance 2005, Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India,

3.5.1 Maharashtra Cotton Monopoly Procurement Scheme

There was a subtle, but significant, shift in the approach to the scheme, away from the original intention of making it self-supporting with larger and larger demands being made on the state government. There was also a major effort to reduce the contributions to the Price Fluctuation Fund (PFF). The scheme was no longer to be run on commercial lines with bank finance but was viewed as a typical departmental scheme of the state government with the entire financial burden, by way of making good the shortfall in working capital as also reimbursing losses, falling on the state government.

Godbole pointed out following points

1. The initial concept of making the scheme self-supporting has been given up and now it has become the responsibility of the state government to meet all shortfalls whether by way of losses or deficits in the margin money, PFF and CCF. The RBI has been insisting on the state government to make provision regarding the losses of the scheme.
2. The initial objectives of the scheme to supply unadulterated cotton to the consumers at a reasonable price and to guarantee the purity of cotton have never been seriously taken into consideration. As can be seen, all the four committees had laid stress on proper grading of cotton. A number of steps were recommended by them to make the grading system rigorous foolproof. Instead, the state government has played havoc with grading by reducing, in December 1997, the number of grades for cotton from five to two, effectively giving unduly high prices for low grade cotton, and doing away with any incentive for superior quality cotton.
3. The guaranteed price has been fixed at levels higher than the support price. It also does not have any relation to the cost of production. The central government also is not consulted before declaring the guaranteed price. This is totally contrary to the original objectives of the Act. In fact, announcement of high guaranteed price has become an act of political patronage and successive state governments, whether belonging to the Congress, Progressive Democratic Front or the Shiv Sena-BJP coalition, have made use of this patronage to pauperise the scheme at the cost of the state government.
4. From 1994-95 season, the state government decided to give advance additional price, in addition to the guaranteed price, making a total final price of Rs 2,100 per quintal for H-4 super quality grade cotton, with final prices of other varieties being fixed according[illegible]. On an average this has meant paying about Rs 300 to Rs 400 per quintal higher than the prevailing market price. The latest example of this is the announcement, in January 1999, by the deputy chief minister of the state that his party would insist on the price being stepped up from Rs 2,100 to Rs 2,500 per quintal.
5. Ad hoc decision-making has been the bane of the system. Thus, for example, the deduction of 3 per cent amount from cotton price towards the CCF was suspended for the

two years 1993-94 and 1994-95. This has increased the financial burden of the state government.

0. The need or relevance of the scheme has never been examined sincerely since its inception. It has been assumed that for some unexplained reasons it has to be necessarily continued the way it is preceding. At no time was the question asked to why monopoly procurement was necessary only for the cotton crop and not other agricultural commodities. The only ostensible reason for the continuance of the scheme is to pander to the vote bank of cotton farmers in Vidarbha and Marathwada.

A few changes have been recently brought into and it appears from the next year the scheme would not be continued.

The cotton classing certificates issued by cotton classing centre (DMI) incorporates the aforesaid cotton fibre properties. The certificates are beneficial to users as indicated below

a) The certificate offers third party guarantee (issued by government agency) for the quality of cotton offered for sale

b) The certificate facilitates the price determination commensurate with quality of cotton offered for sale.

c) The intending purchaser by referring to the classification certificate assesses the spinning quality of ginned cotton and accordingly undertakes sale operations

3.5.1 Minimum Support Prices

Government announces the minimum support price to prevent the exploitation of the farmers by trader/commission agent. Minimum support price also give guarantee that market price cannot fall below the minimum support price. In the following table minimum support price for F-414/H-777/J-34 is given.

Table 4.8

Minimum Support Price for Kapas (F-414/H-777/J-34)

	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
F-414/H-777/J-34	800	900	100	1150	1180	1330	1440	1575	1625	1675	1675	1725	1760	1760

Source- Agriculture statistics at glance (2005), Ministry of agriculture, Government of India.

But some researcher pointed out that existing system of procurement benefits more to trader/commission agent than farmer (Narasimha, P and Suri, K C)*. The Cotton Corporation of India, which is supposed to purchase cotton at the minimum support price (MSP), purchases only a very small percentage of produce that comes to the mandies. Usually, the MSP announced by the government is less than the market price.

4.7 Impact of Pest Infestation on Cotton Quality

The available estimates show that out of the total pesticides consumption of Rs. 28 billion in Indian agriculture, about Rs. 16 billion were spent on cotton alone, of which Rs. 11 billion were spent only to control bolloworms (Alagh 1998; Mayee et al 2002)[1]. So it will be important to study consumption of pesticides in the context of cotton cultivation. Our analysis shows that share of expenditure on pesticide in total expenditure on kapas cultivation is around 25-26%, as shown in following Table 10 and it does not vary much across various farm sizes.

* Narasimha, P and Suri, K C Dimension of Agrarian Distress in Andhra Pradesh, EPW, April 22, 2006

[1] **Alagh, Y K (1998): 'Pesticides in Indian Agriculture', Economic and politically weekly, Vol.23, No 38, September 17, pp 1959-164, Mayee, C D, P Singh, A B Dongre, M R K Rao and S Raj (2002), 'Transgenic Bt cotton', Central Institute for Cotton Research, Nagpur, July 20, pp 1-30.**

There is however, marked difference in the per cent share of pesticide in total expenditure on cultivation of kapas across the states. This is given in following Table 9. It can be seen in the following table that the major cotton producing states Maharashtra and Gujarat shares very low percentage 16.9 and 19.5 respectively on pesticides as a share of total expenditure on cotton cultivation. While farmers in other major cotton producing state Andhra Pradesh spends 34.1 percent of the total expenditure, on cotton cultivation, on pesticides.

Table 4.9

State-wise Share of Pesticide Expenditure in Total Expenditure

STATE NAME	PER CENT SHARE OF PESTICIDES IN TOTAL EXPENDITURE ON KAPAS CULTIVATION
Punjab	41.4
Haryana	30.9
Rajasthan	31.5
Madhya Pradesh	24.0
Gujarat	19.5
Maharashtra	16.9
Andhra Pradesh	34.1
Karnataka	18.1
Tamil Nadu	10.8
other States	11.3
All India	24.2

Source: Derived from Situation Assessment Survey of Farmers.

It is seen that the share of pesticides in the total expenditure on kapas cultivation is highest in Rajasthan, (31.5 per cent) and it is lowest in the Tamil Nadu (10.8 per cent).

4.8 Farmers in cotton sector

4.8.1 Production Structure

The Situation Assessment Survey of Farmers (SAS) conducted by the NSSO in 2002-03 provided fairly detailed information on cotton-growing farmers. In fact, data on cost of cultivation of different crops and their outputs were collected from farmer households in this survey. For the present study, Kapas farmers were identified as those farmer households that undertook cultivation of Kapas during the year. The estimates presented in Table 6 were obtained from unit level of SAS.

4.8.2 Farm Size of Cotton Farmers and Cotton Production as source of farm income

Number of Cotton Farmers and Cotton Production as the source of farm income, how diversified are sources of income of farmers and of cotton farmers in particular has been discussed in this section. The total number of cotton farmer is estimated 4065706 as shown in following Table 4.10.

Farm size is classified in 5 categories (marginal, small, semi-medium, medium and large) depending on the land holding. So it is clear that 49.1 per cent of cotton farmer were either marginal or small and only 3.5 per cent of farmers were large farmers. 47.4 per cent farmers are either semi-medium or medium. So burden of this globalisation in form of stress had to bear by these small and marginal farmers that I have explained in next chapter.

Above table indicates that approximately 50 per cent farmers are small/marginal farmers. The share of income from kapas cultivation for marginal farmers is 49 per cent

and it is only 27 per cent for large farmers. So large farmers earn less income from cotton cultivation than small/marginal farmer does in term of share of total income. So marginal farmers earn 51 per cent income from wages and by producing other crops, and large farmers earn 73 per cent income from other crops, most probably from more than one crop. Semi-medium and medium farmers earn 58-53 per cent income from other crop, so income sources of larger farmers are more diversified compare to marginal/small farmers. Therefore the impact of crop failure has more impact on marginal and small farmers as it is explained above that they have the least access to the irrigation facilities. And the situation of the small and marginal farmers is worse in certain states that I will discuss in next chapter. In worst situation, they have committed the suicides and this is a new phenomenon as pointed out by K C Suri.

Table 4.10

Distribution of Farmers According to Size

SIZE-CLASS OF LAND POSSESSED	NO. OF COTTON FARMERS	P.C. DIST. OF COTTON FARMERS	TOTAL RECPT. FROM CULTIVATION PER COTTON FARMER	VALUE OF COTTON PRODUCED AS P.C OF TOTAL RECPT.	RETURNS PER HECTARE OF COTTON PRODUCTION (RS.)
Marginal	930364	22.9	12839	49	6038
Small	1065466	26.2	24692	48	6674
Semi-medium	1149676	28.3	48892	37	7456
Medium	779070	19.2	99469	32	6385
Large	141129	3.5	234099	27	4311
All sizes	4065706	100.0	50421	35	6378

Source: Derived from Situation Assessment Survey of Farmers

4.8.3 Input use in different size class of land

In our study it is very much necessary to know the efficiency of the farmers, as only aim of the globalisation in India was to increase the efficiency of the farmers. Table 4.11 shows that marginal and small farmers are more efficient than the medium

farmers however large farmers are most efficient. The input output ratio for cotton and by products is 61.4 percent for the large farmers and 60.5 percent for small farmers and the least is for semi-medium farmers that is 49.7 percent. The yield rate of cotton for marginal farmer is 849.1 kg/ha that is highest as against the 643 kg/ha for larger farmers. Though, the larger farmers spend more on irrigation and also have more irrigation facilities than the small and marginal farmers. This we can see in the table that almost 65 percent of the large farmers were spending on irrigation against 31.3 percent of the marginal and small farmers in India so we can see small farmers are more vulnerable to fluctuation in monsoon against large or medium farmers. Returns per hectare of production for small/marginal farmers are more compared to the large farmers. Small/marginal farmers also spend more on fertilizers (21%) in term of share of total expenditure on cotton cultivation as compare to 13.6 percent by large farmers and this phenomenon unduly increases the cost of cultivation of small and marginal farmers and put them in trouble when monsoon fails.

Table 4.11

Size, Classification and Various Varieties

SIZE-CLASS OF LAND POSSESSED	INPUT-OUTPUT RATIO FOR KAPAS & BY-PRODUCTS PRODUCTION (%)	PERCENT SHARE OF FERTILIZERS IN TOTAL EXPENDITURE ON KAPAS CULTIVATION	RETURNS PER HECTARE OF KAPAS PRODUCTION (RS.)	PERCENT OF KAPAS FARMERS USING IRRIGATION	PERCENT SHARE OF IRRIGATION IN TOTAL EXPENDITURE ON KAPAS CULTIVATION	YIELD RATE OF KAPAS (KG/HA.)	PERCENT SHARE OF PESTICIDES IN TOTAL EXPENDITURE ON KAPAS CULTIVATION
Marginal	60.5	21.1	6038	31.3	6.4	849.1	25.0
Small	53.9	20.9	6674	31.3	5.8	720.9	27.6
Semi-medium	49.7	19.0	7456	39.3	8.0	788.2	22.7
Medium	53.6	19.2	6385	49.2	7.5	780.3	23.9
Large	61.4	13.6	4311	64.9	8.6	643.9	23.0
All sizes	54.1	18.8	6378	38.2	7.4	756.9	24.2

Source: Derived from Situation Assessment Survey of Farmers

4.8.4 State-wise distribution of cotton farmers

It is clear from table 12 that Gujarat, Andhra Pradesh and Maharashtra have more than 70 per cent of total cultivated area and more than 62 per cent kapas farmers. When we look at the distribution of kapas farmers we find that almost 40 percent of the farmers are in Maharashtra, 15.2 percent in Andhra Pradesh and 13.5 percent in Gujarat. So we can see that with 40 percent of the farmers maharashtra is producing 22 percent of the total production and to produce that much amount it is using 37 percent of the total area under cotton cultivation in India. This phenomenon shows the totally inefficient production of cotton in Maharashtra as compare to other states. In case of Andhra Pradesh, farmers get more than 45 per cent of total income from cotton cultivation. In case of Maharashtra, it is around 40 per cent. Income from cotton cultivation also contributed more than 47 percent in case of farmers in Gujarat. So in these states farmers who cultivate cotton are heavily dependent on the cotton cultivation for their income. In case of Maharashtra situation is very troublesome as with inefficient production little disturbance in monsoon can force them to shift to other source of income and in absence of that as we will see in next chapter they are heading towards extreme step of suicide. The share of income earn from cotton cultivation is lowest in Rajas than, 16 per cent income from cotton cultivation. The income source of farmers in Rajasthan is more diversified; they earn 84 per cent from other income source.

Table 4.12

Distribution Of Cotton Farmers Among Various States

STATE NAME	NO. OF COTTON FARMERS	PERCENTAGE DIST. OF COTTON FARMERS	AREA UNDER COTTON (HA.)	PERCENTAGE DISTRIBUTION OF AREA UNDER COTTON	VALUE OF COTTON PRODUCED AS P.C OF TOTAL RECPT.
Punjab	126005	3.1	236525	4.4	23.5
Haryana	190204	4.7	252996	4.7	21.7
Rajasthan	301805	7.4	334183	6.2	16.0
Madhya Pradesh	368334	9.1	373056	6.9	42.2
Gujarat	547233	13.5	1320367	24.5	47.5
Maharashtra	1597406	39.3	1976941	36.7	39.7
Andhra Pradesh	616720	15.2	610698	11.3	45.6
Karnataka	173049	4.3	217157	4.0	26.5
Tamil Nadu	95368	2.3	44834	0.8	37.1
other States	49583	1.2	20710	0.4	27.6
All India	4065706	100.0	5387466	100.0	35.5

Source: derived from situation assessment survey of farmers

4.9 Cropping pattern and input structure of major cotton producing districts in Gujarat and Maharashtra

4.9.1 Cropping pattern of Amravati division of Maharashtra

In the following tables we can see cropping pattern of four districts. All these districts experienced the same trend in cropping pattern as the whole country experienced. There was increase in the area under commercial crops and fall in area under coarse cereals.

First in Akola there was fall in the area under jowar from 28.55 percent in TE 1991-93 to 21.69 percent in 1998-2000. Total cereals also experienced the fall in area in globalization period. Crops that experienced the rise in area are cotton and pulses. As area under cotton increased from 33 percent in TE1991-93to 34 percent in TE 1998-00

and area under total pulses increased from 27 percent in TE1991-93 to 30 percent in TE1998-00. Area under wheat and bajra remain same in the stud period while it area under rice and sugarcane cultivation experienced fall.

Same trend was observed in Buldhana, Amravati and Yavatmal district. In Buldhana area under jowar fell from 25.02 percent in TE 1991-93 to 17.74 percent in TE1998-00. Area under pulses increased from 26 percent I TE 1991-93 to 27.34 percent in TE1998-00. However area under cotton cultivation was rising till 1997-98 after globalization started then it started declining however area under cotton cultivation was high in TE1998-00 (32%) as compare to TE1991-93 (29 percent). Area under rice, bajra, and sugarcane fell in the study period.

In Yavatmal area under jowar fell from 24.83 percent inTE1991-93 to 16.31 percent in TE 1998-00. Pulses and oilseeds experienced increase in area under cultivation. Area under cotton cultivation increased to 46 percent from 44 percent and area under cotton cultivation was highest in this district. Rest of the crops experienced increase in area under cultivation marginally.

Amravati district experienced different trend as area under all major crops were falling in the globalization period. Area under cotton cultivation fell to 33 percent in TE1998-00 from 40 percent in TE 1991-93 however it experienced increase in area soon after globalization. Jowar as usual experienced fall in area however area under pulses remain same in the study period.

So all these districts were major cotton producing districts and farmers devoted more land to cotton cultivation traditionally. In globalization period area under cotton cultivation experienced further rise. Globalization increased the pace of shifting from traditional crops like coarse cereals to commercial crops like oilseeds.

Table 4.13
Cropping pattern in major cotton-producing districts in Maharashtra

		RICE	WHEAT	JAWAR	BAJRA	TOTAL PULSES	COTTON	GROUNDNUT	SUGARCANE
Akola	1991-93	0.64	1.85	28.55	0.62	27.79	33.44	0.79	0.29
	1998-00	0.27	1.80	21.69	0.52	30.79	34.07	0.34	0.20
	2002-05	0	1.38	15.34*	0.35	28.87	40.12		.10
Buldhana	1991-93	0.46	2.65	25.02	1.94	26.44	29.57	2.08	0.56
	1998-00	0.07	3.36	17.74	0.87	27.34	31.78	1.17	0.08
	2002-05	0.004	3.78	17.16*	0.62	34.96	24.27		0.13
Yavatmal	1991-93	0.78	1.95	24.83	1.33	19.33	44.37	0.75	0.72
	1998-00	0.62	2.03	16.31	0.91	20.88	45.67	0.68	0.83
	2002-05	0.22	1.48	14.14*	0.52	23.29	41.00		0.8
Amravati	1991-93	1.50	2.08	21.96	0.44	19.12	39.66	3.14	0.19
	1998-00	0.89	1.74	11.56	0.17	19.71	32.97	1.05	0.18
	2002-05	0.83	1.33	11.99*	0.09	25.46	33.31		0.25

Source: Statistical Abstract of Maharashtra, Directorate of Economics and statistics, Government of Maharashtra, various issues

4.9.2 Cropping pattern in major cotton-producing districts in Gujarat

North Gujarat where Gandhinagar and Ahmedabad districts exist, Land productivity is very low. Rainfall is only around 735 mm per annum. The climate is arid to semi-arid and the soil is gray brown coastal alluvium. About 63% of the area is cultivated and a little over a third of this is irrigated. The chief source of irrigation is ground water. However, in some areas, there is overdrawal of ground water (Dr. B. S. Pathak)*.

In Ahmedabad there is a decline in the area under cotton cultivation. As in TE 1993 area under cotton cultivation was 26.53 percent of the total cultivated area, which decline to the 23.71 percent in the TE 2003. Area under coarse cereals fell from 18.45 in TE 1993 percent to 7.74 percent in TE 2003. Food grains also experienced the fall in area from almost half of the total area in TE 1993 to 31.42 percent in TE 2003. Other commercial crops also experienced fall in their area under cultivation. Area under oilseeds fell from 9.11 percent to the 5.37 percent in the same period. So there was fall in not only coarse cereals as it is observed at national level but area under commercial crops also fell.

* Dr B.S. Pathak, Long-term Strategies and Programmes for Mechanization of Agriculture in Agro Climatic Zone–XIII: Gujarat Plains and Hills region

However area under other crops increased which Niti Mehta described as fruits, vegetable, medicinal crops etc.

In Bharuch coarse cereals as well as pulses experienced fall in area under their cultivation. Area under cultivation of coarse cereals was 16.74 in TE 1993 which fell to 9.55 in TE 2003. For pulses fall in area was big as it fell from 34.13 in TE 1993 to 19 percent in TE 2003. As far as commercial crops are concerned no specific trend can be observed as area under oilseeds fell while area under cotton and sugarcane increased in the same period. When we look at the area under cotton cultivation we find that there was a huge jump from 15.45 percent in TE 1993 to 35.67 percent in TE 2003. Area under sugarcane increased from almost negligible 1.06 percent in TE 1993 to almost 7 percent in TE 2003.

North Saurashtra where Bhavnagar, Rajkot and Surendranagar are situated receives 537 mm of rainfall and the climate is semi-arid. The soil is medium black calcerous. About 63% of the area is cultivated, of which 24% is irrigated. Agricultural productivity is relatively high in Saurashtra essentially because of the cultivation of groundnut in this region (Dr. B. S. Pathak)*.

In Bhavnagar most of the area was under commercial crops when liberlisation of agriculture started and same trend of commercialization of agriculture continued even after the liberalisation. Area under coarse cereals fell from 23.84 in TE 1993 to 18.31 in TE 2003. Area under oilseeds was 37 percent in TE 1993, which further increased to 43 percent in TE 2003. Major shift was observed in cotton cultivation as area under this crop increased to almost 34 percent in TE 2003 from just 15.11 percent in TE 1993.

In Rajkot also same trend was observed as in Bhavnagar. 58 percent of the area was under oilseeds cultivation in TE 1993, which further experienced rise in globalization

* Dr B.S. Pathak, Long-term Strategies and Programmes for Mechanization of Agriculture in Agro Climatic Zone–XIII: Gujarat Plains and Hills region

period and area increased to 61 percent in TE 2003. Area under cotton cultivation increased to 25 percent from 13 percent in TE 1993.

Although this area is well developed industrially, it is also the most agrarian in Gujarat. Nearly two-thirds of the area is under cultivation and nearly a third of this is irrigated. Rains reduce progressively as we move into north Gujarat. In the middle areas, where Vadodara district exist, the precipitation is of the order of 900 mm annually. The climate is semi-arid and the soil is medium black (Dr. B. S. Pathak)*.

Vadodara also experienced the trend same as Ahmedabad. In Vadodara area under cotton and other crops increased in this globalization period while pulses, coarse cereals and oilseeds experienced declining trend in this period.

Table 4.14
Cropping pattern in major cotton producing district in Gujarat

DISTRICT/PERIOD	RICE	WHEAT	COARSE CEREAL	PULSES	FOODGRAINS	OILSEEDS	SUGARCANE	COTTON	OTHER CROPS
Ahmedabad &Gandhinagar									
1991-93	10.81	13.66	18.45	4.92	48.37	9.11	0.13	26.53	15.86
2001-03	10.53	10.42	7.74	2.74	31.42	5.37	0.08	23.71	39.42
Bharuch									
1991-93	3.96	4.28	16.74	34.13	59.22	4.23	1.06	15.45	20.04
2001-03	5.78	2.23	9.55	18.95	36.50	1.70	6.63	35.67	19.50
Bhavnagar									
1991-93	0.00	2.92	23.84	2.16	29.14	37.06	0.10	15.11	18.59
2001-03	0.01	1.19	18.31	2.36	21.88	42.76	0.02	33.92	1.42
Rajkot									
1991-93	0.00	4.35	10.67	2.50	17.57	58.12	0.26	12.92	11.13
2001-03	0.00	1.15	6.97	2.45	10.58	61.00	0.02	25.06	3.34
Surendranagar									
1991-93	0.08	2.12	16.40	3.81	22.41	12.91	0.12	47.60	16.96
2001-03	0.10	1.87	9.87	1.71	13.55	16.33	0.04	56.83	13.25
Vadodara									
1991-93	10.76	2.74	19.03	26.21	59.00	7.08	0.31	23.22	10.39
2001-03	9.35	1.41	14.10	20.29	45.15	3.09	0.24	29.37	22.15

Source: Season and crop Reports, department of agriculture, Govt of Gujarat

* Dr B.S. Pathak, Long-term Strategies and Programmes for Mechanization of Agriculture in Agro Climatic Zone–XIII: Gujarat Plains and Hills region

4.9.3 Input structure of major cotton producing districts in Gujarat and Maharashtra

When we look at the irrigated area in these district we find the in 1991-92, very low percentage of area was irrigated. In Akola it was 3.3 percent while for the rest of the district Buldhana, Yavatmal and Amravati percentage of area under irrigation was 3.8,2.9and 6.5 percent respectively in 1991-92. However this irrigated area increased in the globalization period and reached to 5, 6, 7 and 8 percent in the respective district in 1998-99 but this percent age is nominal as compare to major cotton producing districts in Gujarat which we look in next section.

Table 4.15
Irrigated area under in Maharashtra

	1991-92				1998-99			
Districts	Total cropped area	Total irrigated area	Net irrigated area	Percentage of gross irrigated area to cropped area	Total cropped area	Total irrigated area	Net irrigated area	Percentage of gross irrigated area to cropped area
Akola	9282	303	228	3.3	5128	258	184	5
Buldhana	7251	276	147	3.8	8391	529	458	6
Yavatmal	8425	248	182	2.9	9810	651	571	7
Amravati	8157	531	387	6.5	9476	805	645	8

Source: Statistical Abstract of Maharashtra, Directorate of Economics and statistics, Government of Maharashtra, various issues

Here it can be seen that crops under which there area was low are mostly irrigated. Wheat cultivation under which area was 1.85 percent in 1991-92 and 1.80 percent in 1998-00 Akola irrigated area was almost 80 percent in both periods. Same trend was observed in all the districts in wheat and sugarcane cultivation. As we have seen in the previous section that area under irrigation increased in the globalization and in following table we can see that all the increase in the irrigated area went to wheat, sugarcane, and groundnut cultivation. But when we look at the irrigated area under major crops like cotton and jowar we find that almost negligible area is irrigated in all the districts.

Table 4.16
District wise percentage area irrigated under different crops

		RICE	WHEAT	JAWAR	BAJRA	COTTON	GROUNDNUT	SUGARCANE
Akola	1991-92	0	8.8	0	0	1.14	12.37	30.55
	1998-99	0	85.65	0	23.21	0.11	58.97	80.00
Buldhana	1991-92	0	66.16	0	0	0.19	1.38	69.86
	1998-99	0	63.94	0	0	0.48	24.50	88.00
Yavatmal	1991-92	0	59.89	0	0	0.31	28.57	36.98
	1998-99	0	79.62	0	0	0.89	76.47	73.68
Amravati	1991-92	0	79.79	0	0	0.35	2.64	22.22
	1998-99	0	75.52	0	0	0.06	7.6	65.00

Source: Statistical Abstract of Maharashtra, Directorate of Economics and statistics, Government of Maharashtra, various issues

However in the same period fertilizer consumption increased tremendously in all the districts. In Akola fertilizer consumption increased almost 170 times and reached to 7330300 million ton in TE 1998-00. In Buldhana, Yavatmal and Amravati fertilizer consumption increased 150 times, 134 times, 120 times respectively in globalization period. This shows the increase in cost of cultivation while productivity remains low **because of no or very less irrigation**.

Table 4.17
District wise consumption of fertilizers (00 M. tones)

	TE 1991-93	TE 1998-00
Akola	430	73303
Buldhana	379	57662
Yavatmal	411	55360
Amravati	388	46720

Source: Statistical Abstract of Maharashtra, Directorate of Economics and statistics, Government of Maharashtra, various issues

4.9.4 Input structure of major cotton producing districts in Gujarat

In the following table we can see that almost all the major cotton producing districts in Gujarat experienced increase in inputs as well as irrigation facilities in the globalization period. Irrigated area in Ahmedabad increased 28.82 percent in 1993 to 40 .37 percent in 2003. In all the districts we can see that almost quarter of the total area is irrigated as

compare to suicide affected districts in Maharashtra where only 5 to 7 percent of the total area is irrigated. Fertilizer consumption has also increased in these districts in Gujarat. Same trend can be observed for rest of the inputs in these districts.

Table 4.18
Input structure of major cotton producing districts in Gujarat

INPUT/PERIOD	CONSUMPTION OF FERTILIZERS (KG/HEC)		% OF GROSS CROPPED AREA IRRIGATED	
	1993	2003	1993	2003
Ahmedabad	69.98	79.2	28.82	40.37
Bharuch	50.12	109.6	13.08	24.55
Bhavnagar	61.6	98.8	23.37	26.87
Rajkot	66.35	132.3	25.43	26.46
Surendranagar	33.02	79.4	16.91	20.47
Vadodara	82.22	156.8	27.52	41.62

Source: Fertilizer Statistics for Different Years; Season and crop Reports, Department of agriculture, Govt of Gujarat

4.10 SUICIDES IN MAHARASHTRA AND GUJARAT

In the following table we can see that in Maharashtra suicides are not only high but also they have been rising since 1995. In 1995 suicides in agriculture sector were 9.13 percent of total suicides in Maharashtra and this percentage is low as compare to suicides in agriculture sector at all India level. In the same year suicides in agriculture sector in Gujarat were 13.21 percent that is equal to national average. But in later years suicides in agriculture sector started rising in Maharashtra and showed continuous rising trend with high proportion while in Gujarat suicides in agriculture sector remain low as compare to national average and showed declining trend in later years. Further it is necessary to do comparative analysis of suicides across the district.

Table 4.19
Suicides in Gujarat and Maharashtra

	GUJARAT		MAHARASHTRA		ALL INDIA	
Year	Suicides in agriculture	Percentage of total suicides	Suicides in agriculture	Percentage of total suicides	Suicides in agriculture	Percentage of total suicides
1995	534	13.21	1083	9.13	10699	13.6
1996	546	13.09	1981	17.66	13676	15.80
1997	565	14.28	1917	15.17	13526	14.38
1998	653	14.41	2409	17.64	15821	15.37
1999	500	10.03	2423	17.82	15913	14.64
2000	661	13.05	3022	21.58	16318	15.29
2001	594	12.04	3536	24.19	16284	15.29
2002	570	12.27	3695	25.43	17820	16.42
2003	581	12.72	3836	25.99	17107	15.72
2004	523	11.0	4147	28.2	18071	16.2

Source: national crime record bureau

4.10.1 Suicide across the region in Maharashtra

In following table we can see that suicides mortality rate is very high in Amravati division and it is rising over the time as compare to another divisions in Maharashtra. Suicide mortality rate (SMR) in Amravati region was 32.5 percent in 1998 that increased to 40.2 percent in 2001 and remain at that level till 2004. However suicide rate that was already high in this region what was the sudden reason of such a big jump in 2001 is also noticeable. In Maharashtra SMR was 18.9 percent in 1998 and 20.3 percent in 2004. Here it is clear that Amravati division is suicide prone division in Maharashtra so we will look at the agricultural trend as well as suicide trend in this specific division closely.

Table 4.20

Trends in age-adjusted suicide mortality rate (male) across the region

DIVISION/YEAR	1998	1999	2000	2001	2002	2003	2004
Amravati	32.5	32.5	32.5	40.2	39.6	41.8	40.9
Aurangabad	17.8	19.5	18.5	17.9	19.5	19.4	19.6
Konkan	14.7	13.6	13.5	15.5	11.1	12.2	11.8
Nagpur	23.1	23.1	28.7	27.2	28.7	26.9	27.0
Nashik	17.4	14.6	15.6	14.7	17.7	17.8	16.8
Pune	17.4	17.8	20.5	20.5	21.2	21.2	21.3
Maharashtra	18.9	18.5	19.6	20.6	20.3	20.6	20.3

Source

In following table we can see that accept Washim suicide mortality rate was above 40 percent in all districts in Amravati region so this is not the case that certain district were experiencing high mortality rate and others not in this region so this problem of stress is very much centered in this region of Maharashtra. Here also we can see that all districts in this region experienced sudden rise of suicide mortality rate in 2001. In Akola suicide mortality rate increased from 35.6 percent in 1998 to 41.3 percent in 2004. In the same period suicide mortality rate in Amravati increased to 40.5 percent from just 23.6 percent. In Buldhana and Yavatmal it increased to 41.6 percent and 46.2 percent respectively.

Table 4.21

Trends in age-adjusted suicide mortality rate (male) in Amravati

DISTRICT	1998	1999	2000	2001	2002	2003	2004
Akola	35.6	24.7	16.2	29.8	30.1	46.8	41.3
Amravati	23.6	29.3	35.6	44.2	35.3	38.0	40.5
Buldhana	37.9	38.3	36.8	40.7	42.0	43.1	41.6
Washim	29.4	27.5	22.7	30.8	37.6	34.2	30.5
Yavatmal	36.6	38.1	40.0	46.4	49.3	44.3	46.2
Total	32.5	32.5	32.5	40.2	39.6	41.8	40.9

4.10.2 Suicides in major cotton producing districts in Gujarat

Now when we look at the suicide rate in the districts for which data is available in reports of crime record bureau we find no or almost negligible suicides in these districts. In Ahmedabad except 1996 and 2000 there is no suicide case since 1995, the starting point of these tragedies. In Rajkot suicides in agriculture sector are negligible as compare to suicides at national level or other sectors in the country.

Table 4.22

Suicides in major cotton producing district in Gujarat

DISTRICT	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Ahmedabad	NA	5	0	0	0	4	0	0	0	0
Rajkot	NA	NA	NA	NA	NA	NA	1	7	3	2
Vadodara	0	4	0	0	1	5	1	1	0	0

CHAPTER 5

CONCLUSION AND POLICY IMPLICATION

CHAPTER 5

Conclusion

From the discussion it can be concluded that overall agriculture sector is in stress and as half of the population depend on agriculture, which produces only 20 percent of the total production, we can say half of the population is in distress in India. Agriculture sector was facing constant neglect from government in liberlisation. In globalisation public investment in agriculture, institutional credit to farmers fell, forces the farmers to depend on either their own sources or on money lenders. This trend dampened diversification process in agriculture and this is also the reason behind low productivity in agriculture. Rising cost of cultivation because of rising input cost and their increased use in agriculture and low prices of their cultivation in domestic market because of liberalisaion are the factors behind stress in agriculture. But as far as suicides are concerned globalisation is not the sole reason as suicides are taking place in specific regions and in specific crop not in the agriculture sector as a whole in the economy so reasons should be specific to the region and the crop.

Both states Gujarat and Maharashtra experienced high growth rate in 90s as compare to 80s and this is because of rapid expansion of service sector in 90s. As far as cropping pattern is concerned both states experienced diversification especially there was increase in area under cotton cultivation.

Average monthly income of the farmers in Gujarat is greater then farmer's income in Maharashtra. But here there are lot of inequalities in income across the size class of land and these inequalities are more pronounced in the case of Maharashtra. For both marginal and small farmers income is very less as compare to their consumption and this difference is more pronounced in Maharashtra. Expenditure pattern of the farmers in Maharashtra is very much different from the farmers of Gujarat. Farmers across the size class of land in Gujarat spend major portion of their income on irrigation and fertilizers while in Maharashtra farmers' major constituent of expenditure are fertilizer, seeds and casual labour. So less expenditure on irrigation in Maharashtra is a major cause of stress

in farmers and mostly in small and medium farmers. Further when we look at the income source we find that small and medium farmers' income in Gujarat is more diversified as compare to farmers in Maharashtra. This diversified source of income help the small and medium farmers in years of drought but in the same time farmers in maharashtra are forced to commit suicides as they have no alternate source of income except income from wages and cultivation.

As far as indebtness is concerned there is no major difference in both states and also across the size classes of land. For marginal farmers there is social purpose behind loans in both states while their source of loan is relatives and moneylenders in Gujarat and in Maharashtra small farmers are more dependent on banks and moneylenders. For small as well as large farmers in both states, cooperatives played an important role in fulfilling the demand of the credit need of the farmers. When we look at the dependence of small and marginal farmers for loans on moneylenders we find that situation of Gujarat is more pronounced as their small and marginal farmers are more dependent on moneylenders as compare to Maharashtra.

So less diversified income, less irrigated area, more use of fertilizers, less earning of small and marginal farmers in Maharashtra, as compare to their counterparts in Gujarat seems to be the reason behind more stressful situation among the farmers of Maharashtra. Here indebt ness to moneylender is more pronounced in Gujarat among small and marginal farmers then Maharashtra so indebt ness of small and marginal farmers to money lenders cannot be concluded as the reason behind suicides in maharashtra and indebtness among farmers is not specific to the region and if indebtness is concluded as reason behind suicides than suicides should take place in every part of the country.

In cotton cultivation we have seen that added with all the problems of globalization in agricultural sector there was problems of middlemen and textile producers, as they form a pressure group in government and force the government to either keep the price low or allow imports when prices in international market are low. They also take benefit of fluctuation in prices in a year and always try to maximize the benefit of high prices in the market while neglecting the welfare of small and marginal farmers. Here the role of

government procurement agencies most importantly Maharashtra State Co-operative Cotton Growers Marketing Federation (MSCCGMF) is crucial in analyzing the stress and suicides by cotton farmers in Maharashtra. We have seen that MSCCGMF function only in Maharashtra and procurement by this agency fell drastically after 1997 and this is the year when suicides started hitting cotton farmers in Maharashtra. Procurement by central agency CCI which function in rest of the states also fell but not to that extent as it fell in Maharashtra. Further in Gujarat and Andhra Pradesh there was no falling trend noticed in procurement by CCI. This fall in procurement by MSCCGMF is the major cause of stress in cotton farmers in Maharashtra.

Among cotton cultivators, small farmers are more vulnerable to the changes in globalization as cotton cultivation is the major source of their income (constitute 50% of the income) as compare to large farmers. Further application of fertilizer is more among small farmers as compare to large farmers to compensate less irrigation facilities that increases the cost of cultivation of small cotton farmers and increase their vulnerability to price fluctuation in the impact of globalization. And as almost 62 percent of the farmers are in Maharashtra and Gujarat these states should be at the receiving end of this entire crisis but when we look suicides by region we find that suicides are taking place at high rate in cotton farmers of Maharashtra only but not in cotton farmers of Gujarat.

Further we can see that major cotton producing districts in Maharashtra has not experienced shift to cotton cultivation in globalization while there was major shift to cotton cultivation in cotton producing districts of Gujarat in liberalization. It is also said that several small and marginal farmers have shifted to cotton cultivation in globalization as prices of cotton raised but this argument cannot be applied in Amravati division of Maharashtra as they were already devoting half of their agricultural land to cotton cultivation prior liberalization and area under cotton cultivation has increased at low rate as it increased at national level but when we compare with major cotton producing districts in Gujarat we find that these districts have experienced shift to cotton cultivation at higher rate than their counterpart in Maharashtra and now they are also devoting almost half of their land to cotton cultivation yet there are no cases of suicides so this argument of shifting to cotton cultivation is causing stress is fallacious.

There are no suicide cases in major cotton producing districts in Gujarat while major Cotton-producing districts in Maharashtra are suicide prone. Liberalization is not the only cause as I have mentioned. Indebtness is concluded as the reason behind suicides but then suicides should be there in Gujarat also but there are no suicides and further there is another conclusion is made that cultivation without irrigation is the cause I might have concluded in this way but if we accept this as a reason then there should be suicides, prior liberalization as there was not enough irrigation facilities in maharashtra and irregular rainfall is not a very new phenomenon in Indian agriculture and even in that case farmers died because of hunger, they were not doing suicides. So cultivation without irrigation also is not the cause behind such high rate of suicides.

So in Gujarat there was a shift to cotton cultivation and increase in area under irrigation but in Amravati division farmers did not shifted to cotton cultivation and also irrigated area under cotton cultivation did not experience increase in liberalization period. So argument that diversification is causing stress is fallacious and next if cultivation without irrigation is forcing them to commit suicide then this argument should be applied to the period before liberalization when suicides in agriculture was not severe issue and they were not taking at such a alarming rate as we have seen in suicides cases of Yavatmal district in study by Meeta and Rajivlochan. So cultivation without irrigation and diversification both cannot be the cause of suicides by farmers.

Education or illiteracy also cannot be the reason as in both states education level of farmers is same.

On the one hand we see that small farmers forms the major portion of suicide cases in Amravati division and they have taken loans from money lenders and more than 50 percent of the small farmers take loan for the purpose of marriage, ceremonies, medical expenditure and consumption expenditure so they have nothing to do with loan for agricultural purposes. Next major finding is that small farmers are mostly dependent on moneylenders so fall in institutional credit should not affect them. So small farmers are indebted not because of increased usage of input and they are indebted to moneylenders to fulfill their social needs. Earlier there was a system of transferring of loan from one

generation to next generation but now moneylenders forces farmers to pay back in a limited time. And in this pressure farmers are doing suicide in Amravati division. In Amravati division use of fertilizer increased in 90s as compare to major cotton producing districts in Gujarat. This phenomenon increased the cost of cultivation for the farmers in Amravati as compare to prices of cotton. Social factors cannot be the reason behind suicides at this massive rate in this specific reason and the economy as a whole because there were not any social reforms after 1990-91. And it is proved in different studies that suicide are taking place in all castes and section and all castes are facing the same new globalize world.

So increased usage of fertilizers and pesticides increased the cost of cultivation on the other hand fluctuating cotton prices during the years in influence of local traders and decreasing trend in cotton prices over the years because of liberalization is causing stress in cotton farmers. In this scenario instead of supporting farmers government sector pulled back their hand as procurement by government agencies specially MSCCGMF in Maharashtra left the farmers with no option except ending their life in distress.

POLICY IMPLICATION

There has been a long-term crisis in Maharashtra's agriculture. It will be very difficult to resolve it through conventional means.

A minimum 75 per cent of farmers are small and marginal. No credit, no irrigation, no marketing facilities, totally disorganized, no political lobby of their own. Even in a democracy you need a political bargaining power. Making these farmers viable is a stupendous proposition in India's political context.

To make agriculture viable, particularly in Maharashtra, will require several urgent policy measures. Credit must come to farmers at a reasonable rate of interest, in sufficient quantity and at the appropriate time. It should come from the institutional sources of credit such as nationalised banks, cooperative banks and NABARD [National Bank for Agriculture and Rural Development]. Farmers must be able to get rid of private moneylenders. There is ample evidence to show that the exorbitant interest rates, along with the inability of farmers to repay loans, were the primary cause for the suicides.

The other thing that Maharashtra needs to do is take a serious step to increase crop productivity. Cotton productivity is virtually stagnant and there is no significant research to increase it. Thirdly, there is no proper marketing mechanism. Again, in the case of cotton, the monopoly cotton procurement scheme was stopped four years ago. Farmers depend upon market forces. There was tremendous protection to cotton growers under the scheme. The Agriculture Prices Commission suggested that its continuation would be unviable, yet some mechanism has to be created to compensate the farmers.

The fourth and possibly most important requirement is the expansion of irrigation. Maharashtra's [area under] irrigation was 10.5 per cent in 1960. Today it is barely 16 per cent. Maharashtra has taken nearly 46 years to increase the extent of irrigation by a six-percentage point. Sixty to 70 major and medium irrigation projects in the State are incomplete. The Planning Commission has recommended that the State government should take urgent steps to complete these projects. Otherwise the money that has already

been spent will be wasted and there is no point in starting new projects. Innovative measures are required for resource mobilization for financing irrigation projects.

But yes, diversification in agriculture is essential. Just compare western Maharashtra with Vidarbha. There is some diversification in the western region. So if sugar prices fall then farmers have milk or soya or floriculture to fall back on. But in Amravati division if cotton fails everything fails. When we talk of viability of agriculture it is not only crop production but also diversification that is important. That way, if one crop fails then it won't affect the entire State or even the entire national economy.

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APPENDIX

Chapter 1

Table 1

Population and agriculture workers

Year	Total population	Average annual exponential growth rate	Rural population	Cultivators	Agricultural laborers	Total	5+6/4 In %
1	2	3	4	5	6	7	8
1951	361.1	1.25	298.6 (82.7)	69.9 (71.9)	27.3 (28.1)	97.2	32.55
1961	439.2	1.96	360.3 (82.0)	99.6 (76.0)	31.5 (24.0)	131.1	36.38
1971	548.2	2022	439.0 (80.1)	78.2 (62.2)	47.5 (37.8)	125.7	28.63
1981	683.3	2.20	523.9 (76.7)	92.5 (62.5)	55.5 (37.35)	148.0	28.25
1991	846.4	2.14	628.9 (74.3)	110.7 (59.7)	74.6 (40.3)	185.3	29.46
2001	1028.7	1.95	742.6 (72.2)	127.3 (54.4)	106.8 (45.6)	234.1	31.52

Source agricultural statistics at a glance

Table 2

Average annual growth rate agriculture (%)

Five year plan	Growth rate in agriculture and allied activities	Overall GDP growth rate
Seventh plan (1985-90)	3.2	6.0
Annual plan (1990-92)	1.3	3.5
Eighth plan (1992-97)	4.7	6.7
Ninth plan (1997-2002)	2.1	5.5
Tenth plan (2002-07)		

Source agricultural statistics at a glance

Table 3

SUICIDE RATE (ALL INDIA)

Years	No. Of Suicides	Estimated mid year population (in lakhs)	Suicide rate %
1981	40245	6901	5.8
1982	44732	7052	6.3
1983	46579	7204	6.4
1984	50571	7356	6.8
1985	52811	7509	7.1
1986	54357	7661	7.1
1987	58568	7814	7.5
1988	64270	7966	8.1
1989	68744	8118	8.5
1990	73911	8270	8.9
1991	78450	8496	9.2
1992	80149	8677	9.2
1993	84244	8838	9.5
1994	89195	8999	9.9
1995	89178	9160	9.7
1996	88241	9319	9.5
1997	95829	9552	10.0
1998	104713	9709	10.8
1999	110587	9866	11.2
2000	108593	10021	10.8
2001	108506	10270	10.6
2002	110417	10506	10.5
2003	110851	10682	10.4
2004			

Source: Accidental deaths and suicides in India, Crime record bureau, New Delhi, various issues.

Table 4

SUICIDE RATE BY PROFESSION

Years	Services	Business and professional activity	Agriculture
1995	7.6	5.0	9.1
1996	11.9	7.57	14.2
1997	12.1	6.8	14.3
1998	13.4	8.4	16.5
1999	14.3	8.3	16.3
2000	10.64	7.58	16.57
2001	13.38	7.68	15.98
2002	12.5	8.19	17.11
2003			

Source: Accidental deaths and suicides in India, Crime record bureau, New Delhi, various issues.

Table 5

Suicide rate across the states

Years\States	Andhra pradesh	Gujarat	Karnataka	Kerala	Maharashtra	Uttar pradesh
1982						
1983	6.04	4.96	12.10	19.76	5.67	2.15
1984	6.41	5.18	12.17	20.78	6.11	2.20
1985	6.92	5.10	11.71	22.07	6.91	2.22
1986	6.74	5.75	11.09	21.90	7.48	1.90
1987	7.25	5.45	13.76	23.62	7.08	1.70
1988	7.9	5.78	15.69	24.81	8.09	1.78
1989	8.2	6.20	16.78	25.6	8.97	2.0
1990	8.9	6.6	17.9	26.3	10.4	2.3
1991	9.2	7.4	18.5	28.9	11.1	2.0
1992	9.6	8.4	17.7	27.3	11.2	2.3
1993	11.3	8.0	17.3	27.0	12.5	4.1
1994	10.3	8.6	19.1	28.6	12.8	4.7
1995	10.43	9.05	18.10	25.92	12.81	2.67
1996	10.35	9.22	20.33	25.82	13.81	2.93
1997	11.59	8.52	21.44	28.48	14.31	2.71
1998	12.71	9.62	23.46	29.28	15.27	3.02
1999	13.85	10.43	24.18	30.08	15.03	3.27
2000	13.06	10.44	23.66	28.76	15.32	2.76
2001	13.89	9.46	22.53	30.06	15.10	2.11
2002	15.2	8.97	22.86	30.04	14.7	2.49
2003						
2004						

Source: Accidental deaths and suicides in India, Crime record bureau, New Delhi, various issues

Chapter 3

Table 3.1
Changes in proportion of landless households Rural

STATE	1982	1992	2003
Gujarat	16.8	16.3	13.6
Maharashtra	21.2	19.6	17.7
All India	11.3	11.3	10.0

Source: NSS Report No. 492: Some aspects of Operational Land Holdings in India, 2002-03

Table 3.2
Percent distribution of persons in farmer households aged 7 years and above by level of education (male)

State	Not iterate	Literate without normal raining	Literate But below primary	Primary	Middle	Secondary	Higher secondary	Diploma certificate course	Graduate	Post graduate and above	Estd. no. of persons (00)
Gujarat	26.9	.002	17.6	16.4	19.2	11.4	5.2	.005	.021	.004	59335
Maharashtra	25.8	.007	17.7	16.0	26.7	13.4	5.6	.011	.024	.007	95240
All India	35.1	.017	10.1	15.7	18.8	10.0	4.8	.004	.026	.007	1310535

NSS Report No. 496: Some Aspects of Farming, 2003

Table 3.3(A)
Average monthly income from different sources, consumption expenditure and net investment in productive assets (Rs) per farmer household during the agricultural year (July'02-June'03) Gujarat

SIZE CLASS OF LAND POSSESSED (HECTARES)	INCOME FROM WAGES (RS)	NET RECEIPT FROM CULTIVATION (RS)	NET RECEIPT FROM FARMING OF APPLICATION (RS)	NET RECEIPT FROM NON FARM BUSINESS (RS)
<0.01	68.21	0.53	22.43	8.81
0.01-0.40	57.77	13.14	23.60	5.47
0.41-1.00	39.85	32.61	20.09	7.43
1.01-2.00	27.10	50.01	18.29	4.58
2.01-4.00	16.66	68.21	11.28	3.83
4.01-10.0	14.50	72.63	10.30	2.54
>10.00	0.39	95.90	3.69	0
All sizes	34.46	43.36	16.95	5.21

Source: NSS Report No.495: Consumption Expenditure of Farmer Households, 2003

Table 3.3 (B)

Average monthly income from different sources, consumption expenditure and net investment in productive assets (Rs) per farmer household during the agricultural year (July'02-June'03) Maharashtra

SIZE CLASS OF LAND POSSESSED (HECTARES)	INCOME FROM WAGES (RS)	NET RECEIPT FROM CULTIVATION (RS)	NET RECEIPT FROM FARMING OF APPLICATION (RS)	NET RECEIPT FROM NON FARM BUSINESS (RS)
<0.01	74.47	1.76	7.97	15.78
0.01-0.40	61.62	21.19	6.01	11.17
0.41-1.00	47.07	36.97	5.93	10.00
1.01-2.00	25.51	65.96	5.54	2.97
2.01-4.00	14.1	70.97	8.65	6.26
4.01-10.0	4.69	70.96	3.60	20.73
>10.00	2.55	82.06	-0.49	15.87
All sizes	32.44	51.27	5.84	10.43

Source: NSS Report No.495: Consumption Expenditure of Farmer Households, 2003

Table 3.4 (A)

Average expenses in percentage for cultivation per farmer household by size class of land possessed during the agricultural year (July'02-June'03) Gujarat

SIZE CLASS OF LAND POSSESSED	<0.01	0.01-0.40	0.41-1.00	1.01-2.00	2.01-4.00	4.01-10.0	>10.00	ALL SIZES
Seeds	18.18	10.2	18.52	15.5	22.13	20.63	15.61	18.97
Pesticides& insecticide	4.54	5.05	6.29	8.94	8.25	10.74	11.29	9.15
Fertilizer/manure	18.18	22.71	25.38	21.65	19.4	22.3	11.43	21.27
Irrigation	0.5	29.32	14.86	15.63	13.68	11.7	12.74	14.02
Minor repair and maintenance	0	1.64	1.8	3.39	1.93	1.48	0.94	1.94
Interest	0	0.13	0.78	2.66	2.46	2.13	5.63	2.27
Leases for rent	0	1.46	2.35	0	1.71	0.7	0	0.9
Regular labour	0	0.26	1.13	0.98	2.98	3.9	9.55	3.04
Casual labor	4.54	16.72	14.19	16.15	16.15	15.89	25.46	16.18
Other expenses	4.54	12.46	14.67	11.25	11.25	10.4	7.3	12.05
Total expenses	100	100	100	100	100	100	100	100
In real terms	22	2254	4594	10783	17950	45530	76439	11465

Source: NSS Report No 497: Income expenditure and productive assets of farmer household, 2003

Table 3.4 (B)

Average expenses in percentage for cultivation per farmer household by size class of land possessed during the agricultural year (July'02-June'03) Maharashtra

SIZE CLASS OF LAND POSSESSED	<0.01	0.01-0.40	0.41-1.00	1.01-2.00	2.01-4.00	4.01-10.0	>10.00	ALL SIZES
Seeds	25	16.14	19.08	17.24	19.65	19.01	16.82	18.5
Pesticides& insecticide	0	7.86	6.22	8.05	8.63	7.59	7.39	7.78
Fertilizer/manure	12.5	25.17	26.64	26.82	24.53	26.76	28.68	26.31
Irrigation	16.66	8.46	8.1	9.09	7.69	5.95	4.07	7.21
Minor repair and maintenance	0	0.69	0.92	1.29	1.25	1.18	2.19	1.28
Interest	0	0.74	0.9	2.79	1.37	1.92	1.76	1.77
Leases for rent	12.5	1.95	1.41	2.44	0.89	1.17	1.01	0.94
Regular labour	0	0.46	0.78	5.24	2.66	4.52	11.1	3.3
Casual labor	12.5	26.89	27.4	26.12	25.97	25.71	22.37	25.75
Other expenses	16.66	11.58	8.52	7.77	7.31	6.15	4.56	7.09
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
In real terms	24	2149	4962	8574	15173	30232	77006	10793

Source: NSS Report No 497: Income expenditure and productive assets of farmer household, 2003

Table 3.5 (A)

Percentage of productive assets for farm and non-farm business possessed by farmer households by size class of land possessed in Gujarat.

	CATTLE	BUFFALO	SHEEP, GOAT	POULTRY/DUCKERY	MINOR IMPLEMENTS	TRACTORS	ESTD NO OF HHS
<0.01	5.8	15.16	42.79	8.83	5.65	1.2	5.93
0.01-0.40	21.09	12.51	16.98	5.55	9.03	0	21.09
0.41-1.00	29.2	11.53	11.26	23.17	12.16	0.54	29.2
1.01-2.00	19.82	16.84	18.07	25.6	13.91	3.8	19.82
1.01-2.00	19.82	16.84	18.07	25.6	13.91	3.8	19.82
2.01-4.00	13.39	11.88	8.8	26.87	16.41	7.8	13.39
4.01-10.00	9.64	18	1.9	4.9	17.67	21.35	9.64
>10.00	0.91	14.05	0	5.04	25.13	65.14	0.91
All sizes	100	100	100	100	100	100	100

Source: NSS Report No 497: Income expenditure and productive assets of farmer household, 2003

Table 3.5 (B)

Percentage of productive assets for farm and non-farm business possessed by farmer households by size class of land possessed in Maharashtra.

	CATTLE	BUFFALO	SHEEP, GOAT	POULTRY/DUCKERY	MINOR IMPLEMENTS	TRACTORS	ESTD NO OF HHS
<0.01	3.5	15.98	53.83	9.66	6.65	0	1.1
0.01-0.40	4.7	7.7	6.7	11.88	11.84	0	15.2
0.41-1.00	9.01	8.45	7.96	10.33	13.34	1.5	27.68
0.41-1.00	9.01	8.45	7.96	10.33	13.34	1.5	27.68
1.01-2.00	10.25	7.78	9.4	10.14	14.25	2.69	26.26
2.01-4.00	15.1	12.13	9.32	22.13	15.6	5	19.08
4.01-10.00	23.42	16.61	5.72	19.88	16.87	20	9.14
>10.00	33.91	31.03	6.99	16.77	21.42	70.76	1.51
All sizes	100	100	100	100	100	100	100

Source: NSS Report No 497: Income expenditure and productive assets of farmer household, 2003

Table 3.6 (A)

Estimated number of total and indebted farmer households in each size class of land possessed (All India)

SIZE CLASS OF LAND POSSESSED	ESTIMATED NO. OF FARMER HOUSEHOLDS	PERCENTAGE OF FARMER HOUSEHOLDS	ESTIMATED NO. OF INDEBTED FARMER HOUSEHOLDS (00)	PERCENTAGE OF INDEBTED FARMER HOUSEHOLDS	PREVALENCE RATE OF INDEBTNESS (PERCENTAGE)
<0.01	12594	1.4	5708	1.3	45.3
0.01-0.40	292867	32.8	130112	30.0	44.4
0.41-1.00	283610	31.7	129211	29.8	45.6
1.01-2.00	160600	18.0	81920	18.8	51.0
2.01-4.00	93504	10.5	54409	12.5	58.2
4.01-10.0	42581	4.8	27734	6.4	65.1
>10.00	7748	0.8	5148	1.2	66.4
All sizes	893504	100	434242	100.0	48.6

Source: NSS Report No. 498: Indebtedness of Farmer Households, 2003

Table 3.6 (B)

Estimated number of total and indebted farmer households in each size class of land possessed (Gujarat)

SIZE CLASS OF LAND POSSESSED	ESTIMATED NO. OF FARMER HOUSEHOLDS	PERCENTAGE OF FARMER HOUSEHOLDS	ESTIMATED NO. OF INDEBTED FARMER HOUSEHOLDS (00)	PERCENTAGE OF INDEBTED FARMER HOUSEHOLDS	PREVALENCE RATE OF INDEBTNESS (PERCENTAGE)
<0.01	2245	5.93	905	4.6	40.3
0.01-0.40	7942	20.98	3161	16.09	39.8
0.41-1.00	10999	29.06	4906	24.97	44.6
1.01-2.00	7624	20.14	4269	21.73	56.0
2.01-4.00	5040	13.31	3588	18.26	71.2
4.01-10.0	3649	9.64	2598	13.22	71.2
>10.00	347	0.91	217	1.1	62.6
All sizes	37845	100	19641	100	51.9

Source: Derived from NSS Report No. 498: Indebtedness of Farmer Households, 2003

Table 3.6 (C)

Estimated number of total and indebted farmer households in each size class of land possessed (Maharashtra)

SIZE CLASS OF LAND POSSESSED	ESTIMATED NO. OF FARMER HOUSEHOLDS	PERCENTAGE OF FARMER HOUSEHOLDS	ESTIMATED NO. OF INDEBTED FARMER HOUSEHOLDS (00)	PERCENTAGE OF INDEBTED FARMER HOUSEHOLDS	PREVALENCE RATE OF INDEBTNESS (PERCENTAGE)
<0.01	729	1.1	260	0.72	35.6
0.01-0.40	9992	15.48	4027	11.16	40.3
0.41-1.00	18272	27.76	8697	24.11	47.6
1.01-2.00	17126	26.02	9436	26.16	55.1
2.01-4.00	12615	19.16	8414	23.32	66.7
4.01-10.0	6087	9.24	4413	12.23	72.5
>10.00	996	1.51	856	2.3	85.9
All sizes	65817	100	36068	100	54.8

Source: Derived from NSS Report No. 498: Indebtedness of Farmer Households, 2003

Table 3.7 (A)

Per 1000 distribution of outstanding loans (in Rs.) by purpose of loan for each size class of land possessed by farmer household (all India)

SIZE CLASS OF LAND POSSESSED	CAPITAL EXPENDITURE IN FARM BUSINESS	CURRENT EXPENDITURE IN FARM BUSINESS	NON FARM BUSINESS	CONSU-MPTION EXPEND-ITURE	MARRIAGES AND CEREMONIES	EDUC-ATION	MEDICAL EXPEN	OTHER	ALL
<0.01	151	57	77	212	224	3	130	147	
0.01-0.40	133	95	123	146	201	10	72	220	
0.41-1.00	241	227	103	105	133	13	41	137	
1.01-2.00	326	320	46	87	99	5	24	93	
2.01-4.00	388	347	47	50	89	7	13	59	
4.01-10.0	411	398	23	59	50	5	12	41	
>10.00	457	325	32	48	29	15	37	57	
All sizes	306	278	67	88	111	8	33	108	

Source: NSS Report No. 498: Indebtedness of Farmer Households, 2003

Table 3.7 (B)

Per 1000 distribution of outstanding loans (in Rs.) by purpose of loan for each size class of land possessed by farmer household Gujarat

SIZE CLASS OF LAND POSSESSED	CAPITAL EXPENDITURE IN FARM BUSINESS	CURRENT EXPENDITURE IN FARM BUSINESS	NON FARM BUSINESS	CONSU-MPTION EXPEND-ITURE	MARRIAGES AND CEREMONIES	EDUC-ATION	MEDICAL EXPEN	OTHER	ALL
<0.01	79	16	21	93	349	0	228	213	1000
0.01-0.40	63	171	58	76	443	0	43	145	-
0.41-1.00	108	356	28	127	261	28	41	51	-
1.01-2.00	328	484	16	36	11	7	87	32	-
2.01-4.00	281	475	100	4	49	0	9	82	-
4.01-10.0	142	728	2	106	17	0	4	1	-
>10.00	331	575	0	0	0	0	0	94	-
All sizes	203	503	39	63	102	5	30	56	-

Source: NSS Report No. 498: Indebtedness of Farmer Households, 2003

Table 3.7 (C)

Per 1000 distribution of outstanding loans (in Rs.) by purpose of loan for each size class of land possessed by farmer household Maharashtra

SIZE CLASS OF LAND POSSESSED	CAPITAL EXPENDITURE IN FARM BUSINESS	CURRENT EXPENDITURE IN FARM BUSINESS	NON FARM BUSINESS	CONSU-MPTION EXPEND-ITURE	MARRIAGES AND CEREMONIES	EDUC-ATION	MEDICAL EXPEN	OTHER	ALL
<0.01	92	74	245	245	111	0	114	121	1000
0.01-0.40	116	160	88	99	135	1	69	332	-
0.41-1.00	367	304	44	92	82	1	37	73	-
1.01-2.00	324	354	54	39	64	10	8	146	-
2.01-4.00	419	445	17	34	22	1	8	54	-
4.01-10.0	443	448	29	17	35	4	6	20	-
>10.00	474	371	104	3	2	44	0	2	-
All sizes	379	375	48	42	49	9	15	83	-

Source: NSS Report No. 498: Indebtedness of Farmer Households, 2003

Table 3.8 (A)

Per 1000 distribution of outstanding loans (in Rs.) by source of loan for each size class of land possessed by farmer households India

SIZE CLASS OF LAND POSSESSED	GOVT.	CO-OP SOCIETY	BANK	AGRI./PROFESSIONAL MONEY LENDER	TRADER	RELATIVE	DOCTOR, LAWYER ETC.	OTHER	ALL
<0.01	19	53	154	473	40	231	10	20	1000
0.01-0.40	40	145	248	318	49	149	14	37	1000
0.41-1.00	38	170	320	308	46	91	7	20	1000
1.01-2.00	17	205	354	259	42	88	8	26	1000
2.01-4.00	15	226	410	234	47	51	4	14	1000
4.01-10.0	13	230	445	167	61	56	15	12	1000
>10.00	17	232	427	172	106	40	0	6	1000
All sizes	25	196	356	257	52	85	9	21	1000

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Table 3.8 (B)

Per 1000 distribution of outstanding loans (in Rs.) by source of loan for each size class of land possessed by farmer households Gujarat

SIZE CLASS OF LAND POSSESSED	GOVT.	CO-OP SOCIETY	BANK	AGRI./PROFESSIONAL MONEY LENDER	TRADER	RELATIVE	DOCTOR, LAWYER ETC.	OTHER	ALL
<0.01	2	32	67	137	67	646	49	0	1000
0.01-0.40	0	78	270	110	191	313	0	37	1000
0.41-1.00	5	273	129	200	136	196	61	0	1000
1.01-2.00	0	413	239	70	18	254	4	2	1000
2.01-4.00	2	410	437	43	11	98	0	0	1000
4.01-10.0	14	597	191	17	5	154	0	21	1000
>10.00	0	575	425	0	0	0	0	0	1000
All sizes	5	418	272	65	44	177	9	10	1000

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Table 3.8 (C)

Per 1000 distribution of outstanding loans (in Rs.) by source of loan for each size class of land possessed by farmer households Maharashtra

SIZE CLASS OF LAND POSSESSED	GOVT.	CO-OP SOCIETY	BANK	AGRI./PROFESSIONAL MONEY LENDER	TRADER	RELATIVE	DOCTOR, LAWYER ETC.	OTHER	ALL
<0.01	60	143	380	194	12	86	0	124	1000
0.01-0.40	8	612	212	45	15	74	3	31	1000
0.41-1.00	17	516	269	97	12	66	5	18	1000
1.01-2.00	5	458	325	70	7	74	7	53	1000
2.01-4.00	6	496	336	62	9	77	2	12	1000
4.01-10.0	28	443	416	61	6	31	2	13	1000
>10.00	1	508	402	58	0	29	0	2	1000
All sizes	12	485	341	68	8	59	3	24	1000

NSS Report No. 498: Indebtedness of Farmer Households, 2003

Table 9

Percentage of farmer households accessing information on modern agricultural technology through different sources

STATE	EXTENSION WORKER	TV	RADIO	NEWSPAPER	INPUT DEALERS	OTHER PROGRESSIVE FARMERS	ANY SOURCE
Gujarat	21.9	10.4	6.2	6.8	24.3	30.0	55.2
Maharashtra	7.6	20.9	12.6	14.6	17.1	17.0	46.2
India	5.7	9.3	13.0	7.0	13.1	16.7	40.4

NSS Report No. 499: Access to Modern Technology for Farming, 2003

Table 10

Percentage distribution of farmer households not insuring their crops by reason

STATE	UNAWARE OF CROP INSURANCE	NOT INTERESTED	INSURANCE FACILITY NOT AVAILABLE	LACKING RESOURCES FOR PAYMENT OF PREMIUM	N. R.	INSURED	ESTD. (00)
Gujarat	48	29.5	15.4	6.7	.5	19.5	7364
Maharashtra	62.7	24.7	7	5.2	.4	10.7	7055
All India	56.1	16.4	23.5	3.1	.9	4.0	355592

Source: Situation Assessment Survey of Farmers Some Aspects of Farming NSS 59th Round (January–December 2003)

Table 3.11

Domestic production in both states over the period at current prices

	GUJARAT			MAHARASHTRA		
	Agriculture	**Industry**	**Service**	**Agriculture**	**Industry**	**Service**
1993-94	**10321.9**	**13150.1**	**19088.4**	**21069.2**	**26914.7**	**53784.2**
1994-95	**15880.7**	**17495.8**	**22626.3**	**23627.8**	**30595.9**	**62283.3**
1995-96	**13903.4**	**21020.3**	**26812.1**	**26303.6**	**38802.4**	**75624.2**
1996-97	**19913.1**	**24563.3**	**29706.8**	**35310.0**	**41246.7**	**82115.9**
1997-98	**19656.2**	**22907.0**	**34702.4**	**29680.3**	**48820.3**	**94028.9**
1998-99	**22901.3**	**26453.9**	**40454.8**	**32063.8**	**45739.8**	**108560.7**
1999-00	**16795.0**	**27922.0**	**47562.0**	**36799.8**	**50234.5**	**129606.6**
2000-01	**14779.0**	**26178.0**	**48919.0**	**34643.6**	**43422.8**	**132126.7**
2001-02	**18321.0**	**28834.0**	**53354.0**	**38018.9**	**45448.2**	**151755.9**
2002-03	**17926.0**	**39968.0**	**60618.0**	**38175.7**	**50433.6**	**172202.4**
2003-04	**30394.0**	**43426.0**	**68739.0**	**37427.3**	**58338.0**	**198235.6**

Source: Handbook on statistics of Indian Economy, Reserve Bank of India, 2006

Table 3.11
Domestic production in both states over the period at constant prices

	GUJARAT			MAHARASHTRA		
	Agriculture	**Industry**	**Service**	**Agriculture**	**Industry**	**Service**
1993-94	**10321.9**	**13150.1**	**19088.4**	**21069.2**	**26914.7**	**53784.2**
1994-95	**14718.2**	**15807.9**	**20577.5**	**20697.9**	**27414.1**	**55631.2**
1995-96	**12796.0**	**17215.8**	**22617.6**	**21600.0**	**32206.7**	**61380.9**
1996-97	**17363.4**	**19409.7**	**23879.5**	**25101.7**	**32366.3**	**62264.5**
1997-98	**15813.7**	**17562.1**	**27271.3**	**21382.1**	**36871.6**	**68085.2**
1998-99	**16754.5**	**18796.2**	**29369.8**	**22777.5**	**34626.7**	**73964.3**
1999-00	**11743.0**	**20132.0**	**33287.0**	**24684.0**	**36582.1**	**82645.6**
2000-01	**10291.0**	**18841.0**	**33443.0**	**23203.2**	**30206.5**	**83056.4**
2001-02	**13366.0**	**19221.0**	**35250.0**	**24632.1**	**29613.9**	**88935.4**
2002-03	**11449.0**	**25942.0**	**38055.0**	**24217.0**	**31695.1**	**98640.4**
2003-04	**19910.0**	**27100.0**	**41653.0**	**22702.8**	**34058.5**	**109134.6**

Source: Handbook on statistics of Indian Economy, Reserve Bank of India, 2006

Chapter 4

Table 1

Seasonal Variations in Cotton Prices Over Time for J-34-RG Variety Of Cotton October to September Cotton Season (Rs. per candy in Mumbai Market)																	
Month/Year	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Oct		6730	10405	9995	11165	17940	19175	17930	20580	19595	17855	18705	17540	16880	22640	17615	16625
Nov		7230	9925	8990	11360	19100	19620	17340	19910	19695	16245	19795	15750	17660	23370	16550	16985
Dec		7420	10785	8595	13115	22515	18335	16305	19730	18720	15170	20360	15560	18560	22750	15780	17825
Jan	6290	7230	11620	7725	13910	23225	17475	16325	21310	18395	15680		15110	18400	24435	15840	17460
Feb	5935	7460	11785	7635	16585	23175	16855	16205	21835	18300	16725		14820	19855	24550	15700	16910
Mar	5455	8455	10945	8740	19650	23390	15845	17115	21630	18120	17715		14665	21320	23350	16580	17020
Apr	5405	9940	10870	9320	21120	22810	16740	17340	21585	18120	17930		15460	23020	23820	16425	18030
May	5625	10595	10805	9680	21465	20920	18165	18540	21685	18570	19400		15895	23195	24320	17200	18110
Jun	6100	10855	11345	10515	21660	20640	18255	19925	22465	19280	20165		16550	23445	23950	17605	18505
Jul	6330	11670	11950	10780	21655	21200	17445	19715	21985	19995	20430		17490	24590	24455	17675	18890
Aug	6455	13705	11270	10935	20765	20555	17840	20030	20780	19905	20350		17380	23975	24120	17490	19535
Sep	6540	12465	10145	12375	19420	20265	18045	20390	19395	19880	20135		16280	23730		17140	

Table 2

Cotton Production, Productivity and Domestic &International Prices

Year	Area	Production	Yield per hectare	Coverage under Irrigation	Departure from normal (Monsoon)	Departure from normal	Cotlook A	Cotlook B	Prices
	(Lakh Hector)	(Lakh bales)	Kg/ hectare	%	%	%	world	world	India
1990-91	74	117	269	32.9			83	78	59
1991-92	76	119	266	33.3			63	59	97
1992-93	75	138	311	34.6	-7.6	-7.1	58	54	89
1993-94	74	122	278	34.7	-0.7	-0.7	71	67	100
1994-95	79	139	300	34.2	10.2	9	94	92	154
1995-96	91	170	319	35.0	0	-2.9	86	81	159
1996-97	91	178	332	35.8	2.4	0.4	79	75	133
1997-98	89	158	302	36.8	2.1	7.8	72	71	155
1998-99	93	165	302	34.9	4.6	6.4	59	54	167
1999-00	87	156	304	35.2	-4	-1.1	53	50	147
2000-01	86	140	278	34.3	-7.6	-12.7	57	54	157
2001-02	87	158	308	34.0	-8.3	-6.3	41	39	149
2002-03	77	136	302	33.1*	-19.2	-18.6	56	52	142
2003-04	76	179	399		4.9	6.8	69	67	181
2004-05	89	243	463		-12.7	-12.5	54	51	166
2005-06P					-1	-	56	54	144

Notes- P: Stands for Provisional

Source: Data of production is taken from the cotton advisory board, International Cotton Advisory Committee, Report/Statements, 2005, Part-II.
Domestic prices is taken from Economic Survey 2005-06, Ministry of finance, GOI,

Table 3
Cropping pattern in Akola (in thousand hectare)

Akola										
	Rice	Wheat	.jawar	Bajra	to.cereal	To.pulses	.foodgrain	Sugarcane	Cotton	Total Oilseeds
1987-88	72	267	2999	36		2262		11	3439	814
1988-89	38	299	2773	56		2439		18	3541	714
1989-90	71	287	2849	54		2577		18	3593	596
1990-91	70	274	2753	55		2606		27	3617	700
1991-92		191	2774	52	2988	2420	5408	29	3592	457
1992-93		177	2878	62	3199	2916	**6115**	5	3057	743
1993-94		180	2429	57	2727	**3329**	**6056**	25	2951	827
1994-95		213	2116	54	2463	**3455**	**5918**	21	3251	858
1995-96		204	1957	59	2278	**3362**	**5640**	23	3619	980
1996-97		217	2113	51	2428	**3365**	**5793**	20	3623	972
1997-98		209	1970	56	2280	**3229**	**5509**	19	3682	994
1998-99		258	1669	56	2028	**3354**	**5382**	15	3603	**1307**
1999-00		300	1610	50	1991	1557	**5262**	20	3595	**1508**
2000-01		225	1546	50	1864	3411	**5275**	34	**3335**	**1439**
2001-02		408	983	4	1548	928	2476	164	935	672
2002-03		103	832	24	964	1512	2476	4	2229	353
2003-04		87	824	19	938	1606	2544	8	2177	392
2004-05	0	34	823	14	880	1547	2427	5	2076	587

Source: Statistical Abstract of Maharashtra, Directorate of Economics and statistics, Government of Maharashtra, various issues

Table 4
Cropping pattern in Buldhana (in thousand hectare)

buldhana										
	Rice	Wheat	kh.jawar	Bajra	to.cereal	To.pulses	To.foodgrai	Sugarcane	Cotton	Total Oilseeds
1987-88	27	192	2270	127		1791		18	2287	1091
1988-89	26	233	2006	179		1906		33	2442	1132
1989-90	25	281	2116	142		1940		27	2553	1060
1990-91	35	303	2042	128		2822		27	2667	1237
1991-92	35	123	1987	145	2307	**1803**	4110	34	2571	1563
1992-93										
1993-94	25	205	1909	138	2438	**2469**	4907	11	2112	1525
1994-95	13	266	**1650**	118	2203	**2600**	4803	26	2436	1342
1995-96	11	218	**1231**	133	1905	**2518**	4423	20	2547	1416
1996-97	10	202	**1733**	**70**	2241	**2347**	4588	13	2524	**1057**
1997-98	7	207	**1649**	**92**	2161	**2176**	4337	6	2655	**991**
1998-99	5	355	**1517**	**55**	2207	**2394**	4601	8	2658	**857**
1999-00	2	355	**1511**	**75**	2166	**2417**	4583	10	2580	**1076**
2000-01	2	216	**1444**	**79**	2157	**2471**	4628	12	2198	**963**
2001-02										
2002-03	1	289	1377	57	1981	2633	4614	13	1683	910
2003-04		305	1297	42	1917	2740	4657	10	1831	983
2004-05	0	265	1216	42	1874	2552	4426	7	1987	1525

Source: Statistical Abstract of Maharashtra, Directorate of Economics and statistics, Government of Maharashtra, various issues.

Table 5
Cropping pattern in Amravati (in thousand hectare)

amravati										
	Rice	Wheat	kh.jawar	Bajra	to.cereal	To.pulses	To.foodgrai	Sugarcane	Cotton	Total Oilseeds
1987-88	129	329	1946	37		1549		5	3488	586
1988-89	158	356	1879	47		1716		5	3628	675
1989-90	148	314	1894	43		1723		4	3523	663
1990-91	143	308	1792	37		1560		17	3730	734
1991-92	139	**111**	1826	41	2139	1799	3938	14	**3611**	749
1992-93	127	**165**	1987	37	2328	**1607**	3935	9	**3332**	**863**
1993-94	**108**	**132**	1594	21	**1897**	**1913**	3810	11	**3206**	**1023**
1994-95	**82**	**158**	**1359**	17	**1663**	**2098**	3761	22	**3414**	**1137**
1995-96	**99**	**154**	**1179**	16	**1490**	**1956**	3446	29	**3717**	**1307**
1996-97	**104**	**155**	**1222**	16	**1524**	**1866**	3390	28	**3703**	**1353**
1997-98	**95**	**163**	**1197**	17	**1497**	**1932**	3429	18	**3509**	**1571**
1998-99	**87**	**192**	**1158**	19	**1478**	**2084**	3562	20	**3209**	**2051**
1999-00	**88**	**217**	**1172**	10	**1514**	**2200**	3714	18	**3260**	**2148**
2000-01	89	134	**1188**	9	**1473**	**2313**	3786	35	**3091**	**2045**
2001-02	2	237	1463	78	2102	2433	4535	11	2201	877
2002-03	110	111	1030	8	1282	2163	3445	23	2790	1672
2003-04		116	1003	8	1252	2151	3403	25	2752	1653
2004-05	96	103	928	7	1168	1973	3141	14	2682	1769

Source: Statistical Abstract of Maharashtra, Directorate of Economics and statistics, Government of Maharashtra, various issues

Table 6
Cropping pattern in Yavatmal (in thousand hectare)

yavatmal										
	Rice	Wheat	.jawar	Bajra	to.cereal	To.pulses	food grain	Sugarcane	Cotton	Total Oilseeds
1987-88	87	137	2239	100		1508		50	4149	419
1988-89	80	209	2215	120		1739		30	4380	493
1989-90	82	176	2262	123		**1663**		100	4356	421
1990-91	88	192	2132	127		**1810**		80	4240	464
1991-92	82	101	2277	115	2577	**1691**	**4268**	71	**4161**	336
1992-93	86	154	**2314**	130	2685	**1956**	**4641**	69	**4022**	425
1993-94	66	169	**2344**	101	**2683**	**2055**	**4738**	57	**3879**	**453**
1994-95	53	182	**1991**	99	**2331**	**2069**	**4400**	56	**4215**	**506**
1995-96	50	194	**1633**	99	**1979**	**2197**	**4176**	65	**4653**	**562**
1996-97	57	204	**1644**	104	**2016**	**2037**	**4053**	101	**4620**	**600**
1997-98	67	186	**1608**	89	**1955**	**2032**	**3987**	68	**4453**	**761**
1998-99	54	211	**1574**	89	**1932**	**2043**	**3975**	65	**4456**	**928**
1999-00	53	242	**1535**	86	**1921**	**2122**	**4043**	70	**4461**	**958**
2000-01	52	171	**1545**	92	**1876**	**2218**	**4004**	74	**4477**	**921**
2001-02	0	101	853	23	988	1509	2497	6	2314	412
2002-03	37	176	1395	56	1666	2229	3895	72	4033	953
2003-04		176	1291	50	1551	2198	3749	56	3760	1097
2004-05	24	51	1151	36	1263	1892	3155	30	3328	1830

Source: Statistical Abstract of Maharashtra, Directorate of Economics and statistics, Government of Maharashtra, various issues