

**AGRARIAN DISTRESS AND INDEBTEDNESS IN
INDIA: A STATE LEVEL ANALYSIS**

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CERTIFICATE

I, CHETAN CHAUHAN, do hereby declare that the dissertation entitled 'Agrarian Distress and Indebtedness in India: A State Level Analysis', for the degree of **Master of Philosophy** is my bonafide work and may be placed before the examiners for evaluation.

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CHAPTER 1

INTRODUCTION

Since independence, India has travelled a long journey from an importer of food to a food self sufficient nation. But the ongoing spate of suicides of farmers in India indicates that they are in great distress. This is harmful to the country's agriculture which further determines the food security of the country. The recently conducted Situation Assessment Survey by the National Sample Survey Organisation in 2003 clearly brought out that the states where the incidences of suicides were high were the states where the proportion of indebted farmer's households was also high, for instance, as in Andhra Pradesh, Maharashtra, Karnataka, Punjab, Kerala and Tamil Nadu. At the all India level 48.6 % of farmers households were reported to be indebted.

The reasons for indebtedness amongst farmers are many and one of the most important reasons is that farmers aren't getting enough remuneration for their produce. This could possibly be because of a sharp deceleration in the growth of prices of many agricultural commodities and increase in the cost of cultivation after the introduction of reforms. Also the uncertainty of weather as well as dependence on borrowed credit from informal moneylenders are also some other reasons to add on.

1.1 STATEMENT OF THE PROBLEM

Farmers have been an integral part of the development of the country prior to independence and even after that. Before independence, the farmers have actively participated in the freedom struggle. After independence, with the support of the government, they gave India the proud status of a self-sufficient nation. But after the introduction of reforms, the market forces have proven disastrous on part of remunerative prices of the crop. The increasing cost of cultivation and the decrease in the gap between prices and returns are enough to break the back of the farmers. Above this, the non-repayment of borrowed credit from the informal moneylenders who charge exorbitant rates of interest add to the humiliation amongst the farmers in the society and its because of this humiliation they take the extreme step of committing suicide.

The increase in burden of debt is the major reason behind the farmers committing suicide. Indebtedness is not new to Indian agriculture but suicides due to indebtedness are. Looking at

the spatial dimension of suicides of farmers, they are mostly concentrated in the regions of Andhra Pradesh, Maharashtra, Karnataka and Punjab, the states which in the past were agriculturally developed. In the southern states the cropping pattern is dedicated to cotton cultivation, a cash crop which is also referred to as 'white gold' has led farmers in debt trap. In the northern states of Punjab the excessive expenditure on farm business and social ceremonies like marriages have made the farmers indebted. In order to clear all the debts the farmers are compelled to cultivate cash crops which can give them high returns. And the cultivation of cash crops is just a gamble because it may give the farmers higher returns or may even make them more indebted if they do not get enough returns for their produce. So now the question arises that if the farmers in order to clear their debts cultivate only cash crops then who will cultivate food crops? The status of food security will again be questioned.

Almost 80 % of the farmers who are indebted are the ones who possess land up to 2 hectares. They are small and marginal farmers and in total they constitute around 84 % of the estimated number of farmers household. (NSSO, 59th Round, No. 498). This sums up to be a huge proportion of the total farmers households. The medium and large farmers may somehow be spared of the market forces but how will the small and marginal farmers who constitute 84 % of the total farmers households come out of the debt trap?

1.2 LITERATURE REVIEW

The survey of literature identified namely four major issues regarding indebtedness in Indian agriculture. They are as follows –

1. Changing nature of agriculture.
2. Features of indebtedness.
3. Impact of indebtedness.
4. Risk management strategies.

1.2 (i) Changing Nature of Agriculture

The National Agricultural Policy of the ministry of agriculture, government of India (2000), said: "Agriculture has become a relatively unrewarding profession due to a generally unfavourable

price regime and low value addition, causing abandoning of farming and increasing migration from rural areas. The situation is likely to be exacerbated further in the wake of integration of agricultural trade in the global system, unless immediate corrective measures are taken.” (Suri 2006). K.C. Suri historically explains the phases in the evolution of agrarian relations after independence: reform and consolidation of the agriculture during the 1950s and 1960s on the lines charted out during the freedom struggle; The green revolution and the growth of political populism during the 1970s and 1980s; and that of liberalization and the deterioration of the farmers’ condition during the 1990s and after. The author focuses on the pro-peasant policies that were implemented immediately after independence, by the ruling Congress Party; they were the abolition of intermediaries, reduction of land revenue, provision of irrigation facilities and a greater share in political power for the farming communities at the state level. The author also indicates the impact of the changed agrarian relations on other sectors as he says “this also suited the strategy of import substitution and industrial development pursued after independence – ensuring that farmers produced necessary surplus food grains, which would free India from its chronic dependence on foreign countries and also enable the government to divert valuable foreign exchange to investment in industries; ensure the supply of raw materials necessary of the expansion of industries and provide markets for the manufacturing sector. The growth of agriculture was looked upon as a means to achieve some other end. The improvement in the living conditions of the farmers itself was not the objective because both capitalist and socialist theorists consider the transfer of the agrarian surplus as the necessary condition for the growth of industry and both entertain a contempt for the peasants. But this instrumental view helped the farmers at least to some extent”. Regarding the adverse impact of the changed agrarian relations the author points out that with the increased use of machinery for agricultural operations, cultivation of single crops under the pressure of the markets, (coupled with the increase in the number of small holdings), the earlier practices of farmers cooperating with each other in agricultural operations began to die out. Such cooperation was now neither needed nor feasible. Agriculture became a cash-based individual enterprise requiring high investments in modern inputs and wage labour. He ponders over to the need of credit and the problems in its availability as he says “Now, a farmer has to draw more and more credit to plough it into the land. As a result, the demand for credit had increased by several times when compared to the earlier period. Lack of remunerative prices in such a situation would cause immense trouble to

farmers. If, in addition, the crop fails – due to either natural or man-made factors – the farmer’s economy is doomed. The uncertainty of crop yield and fluctuations in the prices of agricultural produce caused a great deal of mental distress to the farmers”. Another change in the Indian agriculture is the change in the cropping pattern. **V.S. Vyas** says that “There have been significant changes in the output mix in agriculture. These changes are reflected in a shift of area from food grains to non-food grains, and within food grains from coarse cereals to finer cereals. The land vacated by cereals is occupied by oilseeds, cotton, tobacco and sugarcane. By their very nature, these crops are mainly for sale in the market. Whatever changes take place in prices of these crops affects the farmers very profoundly”. Regarding the changing cropping pattern, **S Mohanakumar and R K Sharma** have proposed two hypotheses in their study. They are -

- The higher the dependence of a population on agriculture, the greater is likely to be the incidence of casualties;
- The more a crop is integrated with the world market, the higher would be its adverse consequences on the dependent population.

The observed decline in area under staple food crops and the enormous expansion in the area of cultivation of cash crops, particularly of the export-oriented crops conform to the general trend in the cropping pattern of countries, which have implemented neo-liberal trade reforms. **K.C. Suri** criticizes the changed cropping pattern when he says “some experts point out that the present cropping pattern is unviable and that the farmers have to diversify and shift to high-value non-food crops, such as flowers and fruits that can be exported. We should keep in mind that the farmers in states with greater diversity in agriculture are more indebted and under more despair than farmers in the states with less diversified agriculture”. Another major change since the early 1990s has been the growing openness of the economy. At the domestic level, several steps have been taken to free the movement of agricultural commodities and ensure free trade. Licensing requirements have been relaxed, movement restrictions have been lifted, selective credit control has been abolished, and a model marketing act is proposed to allow farmers to bypass the mandatory requirement of sale in regulated markets. Several other measures in the direction of liberalizing the domestic markets have been proposed. There are still a number of restrictions and constraints but the direction in which agricultural economy is moving is clear. (**Vyas 2004**). **Gill and Singh** introduces to us another major feature of the changed nature of Indian agriculture, which is the increasing mechanization. They comment that, mechanization of

harvesting of major crops and intensive use of biological technologies have not only reduced the household use of labour power but also substantially contributed to the rise in the cost of production. Over capitalization of mechanical power such as tractors and tube wells has made available the use of the tractor on a hire purchase basis to the small farmers, which has reduced the use of family labour as well as completely eliminated tilling of land by bullocks even by the small and marginal farmers. The farmers have turned managers of the production processes of agriculture because the manual operations have been almost eliminated and the migratory workforce available at low level of wages is doing the remaining tasks. The state's role as a facilitator of agricultural growth is examined by looking at public investment in agriculture, the rural financial market and agricultural extension, among others. **Srijit Mishra** who worked on the farmers' suicides in Maharashtra says "In the absence of data for Maharashtra, a perusal of the all India situation suggests that gross fixed capital formation in agriculture as a proportion of the GDP declined from 3.1 per cent during 1980-85 (sixth plan) to 1.6 per cent during 1997-2002 (ninth plan). During the same period, gross fixed capital formation in agriculture as a proportion of total gross fixed capital formation declined from 13.1 per cent to 7.4 per cent in India, the proportion of plan expenditure towards agriculture and allied activities declined from 6.1 per cent to 4.5 per cent in India and from 6 per cent to 3.3 per cent in Maharashtra". Similarly, **Gill and Singh** elaborates the growth and structural change of the Punjab economy. "The growth rate of NSDP declined to 4.7 per cent in the 1990s compared to that of the 1980s, which was 5.4 per cent. Major sectors of the Punjab economy showed a deceleration of the growth process in the 1990s compared with the 1980s and the worst performance was of the agricultural sector. The rate of growth of the agricultural sector dwindled from 5.15 per cent per annum during the 1980s to 2.16 percent in the 1990s. Growth of income generated by the agriculture sector from crops slid from a rate of 4.9 per cent per annum in the 1980s to nearly 0.4 per cent in the 1990s. Previously, the agriculture sector was the engine of growth and a major contributing sector to the per capita income of the state from the mid-1960s to the early 1990s. Such a rapid deceleration of the rate of growth of the agricultural sector of Punjab has far-reaching consequences for the rest of the economy due to interdependence of the sectors, and has pushed those who are dependent for their livelihood on agriculture into an unprecedented crisis. Wide variations noticed in the growth performance of different sectors of the Punjab economy have dramatic consequences for the economic transformation". Gill and Singh also brought out the

consequence of the negative performance of the agriculture sector on the industrial sector and thereby have well illustrated the interdependence of sectors.

“It is important to mention here that the industrial sector of Punjab was not an important sector of its economy, but gained importance during the faster growth of the agriculture sector and increased its share in GSDP from 7.86 per cent in 1966-67 to 20.12 per cent in 1995-96. Thereafter, the industrial sector’s share in GSDP declined and was 16.1 per cent in the year 2000-01. However, the tertiary sector has been emerging as an engine of growth during the structural transformation and generated 45 per cent of the GSDP in 2000-01”. Rao and Suri have analyzed the economy of Andhra Pradesh and they mention “One of the most disappointing developments in AP’s agricultural sector over the last two decades has been the declining public sector capital formation. Adequate expenditure on rural infrastructure like roads, markets, storage, communication, health, education and research apart from irrigation is a prerequisite for sustainable agricultural growth. The expenditure on the infrastructure will sustain the growth in production, productivity and income generation in agricultural sector. The share of agriculture and allied activity in state government expenditure under various plans has declined from 11.8 per cent in 1980-81 to 1.8 percent in 2001-02. The expenditure on irrigation declined significantly under various plans. When compared to other states, AP had the lowest share of agriculture spending in total plan expenditure till 2002-03. While the expenditure on agriculture to total expenditure is around 7 per cent in Karnataka and 5 per cent at the all-India level, it was only around 3 per cent in AP. Clearly, the planning process in AP has neglected long-term issue of sustainable development”. Another major feature of the new agrarian structure is the rising cost of cultivation and decreasing net returns. As a consequence of which farmers are forced to take loans, and in a situation when institutional credit is rarely available, farmers have no choice but to rely upon non-institutional credit sources that charge exorbitant rate of interest, which ultimately entraps the farmer into debt. Rao and Suri have brought this fact very well. “In earlier times, farmers could withstand crop losses because the component of family labour and farm-based inputs constituted a greater proportion in the composition of the inputs, and any loss of crop mainly amounted to a loss of labour and family-based inputs. With the enormous increase in the paid-out input costs, which are mostly met by taking cash loans, any crop loss or price crash would land the farmers in a distress situation. Secondly, since many farmers depend only on one crop for their livelihood, the situation becomes miserable when the crop fails or they

do not get a remunerative price for their product as they have very little to fall back on. In case this situation prevails for two or three years continuously, the farmers are invariably driven to debt trap. A farmer can repay the loan incurred, if only he gets a reasonable crop and a reasonable price for the produce. Since both these conditions are rarely met, the loans get piled up. When a farmer cannot clear all the outstanding debt even by giving all that is produced, assuming that a good crop is possible, he has to keep borrowing to meet agricultural and family expenses every year. Usually farmers sell their lands to pay off debts when they lose confidence to clear the debts on subsequent crops. For the last few years, the agrarian economy has fallen on such bad times that farmers hardly find buyers for their land, and those willing to buy would only do so at a very low price”.

1.2(ii) Features of Indebtedness

(a) Availability of Credit

The most important necessity for the farmer is the flow of credit at the right time at an affordable rate of interest. **Akkineni Bhavani Prasad's** views about agricultural credit are “The Government of India through Reserve Bank of India has laid down a stipulation that out of the total lending of any bank, 40 per cent is to be distributed on prime lending and out of this 40 per cent, 18 per cent is exclusively for agriculture sector. But when we could see the performance of commercial banks in the last five years, they have not exceeded 11 per cent or 12 per cent to the farm sector. The lending by the cooperative banks to the farmers is much more anti-farmer. The reasons being – firstly, the loan component is not released in time and secondly, the rate of interest is much higher than the commercial banks. Also, in cooperative banks no new members of the farming community are getting loans. As on today, the entire outstanding amount from the farmers to the cooperative banks would be around Rs. 5000 crores. As the farmer is not in a position to avail the loan as and when he requires the finance, he is rather forced to go for obtaining loans from the private money lenders, at an exorbitant rate of interest of 24-36 per cent”. Regarding farm indebtedness **P Satish** says, “Farm indebtedness per se is not an issue. If properly serviced through income generated from farm operations, debt would not turn into a burden. The servicing ability of the recipient is related to his ability to generate sufficient returns from the activity in which the credit is deployed”. Regarding the disbursement of agricultural

credit **Mohanty and Shroff** brings this out that, “The credit facilities extended by the cooperative societies and other formal agencies in view of the rising cost of cultivation are inadequate. They hardly benefit the small farmers. The credit provided by the licensed moneylenders was also limited. The number of these moneylenders and also the amount of loans advanced by them to the non-traders (including the farmers) decreased noticeably. Moreover, in the recent years the licensed moneylenders have ceased to play any role. As a result, the farmers have no choice other than to depend on the informal moneylender/shopkeepers for timely agricultural input requirement who usually charge exorbitant rates of interest. As a consequence, a significant portion of farmers’ agricultural income goes in repaying their loans. At times, distress sales of agricultural produce also take place”. **Sukhpal Singh** says about the institutional finance in Punjab that the issue is not that of availability of institutional credit, but access, ease and terms and conditions of such finance. Deciphering out the picture of Punjab agriculture, he says, “Punjab farming is very capital intensive, productive activities like motor burn outs, tube well deepening and electric connection activation costs a lot of money (nearly 7 to 10 per cent of the gross farm income of the farmers. But the ironical fact is that there is hardly any institutional credit available for these purposes. The high cost of farming makes the need for credit for day-to-day expenses in the farm a necessity and the commission agent a necessary evil”. Additionally, the seasonal crop loan limits for different crops are inadequate to meet the higher and increasing cost of production. This gap that remains is the one for which formal institutions do not offer any credit, make farmers turn to the private moneylenders. Farmers in Punjab spend heavily on so-called non-productive (consumption) purposes and it is the non-availability of the consumption loans from formal institutions that leads farmers to use productive loans for consumption purposes. This also leads farmers to resort to obtaining credit from moneylenders who charge exorbitant rates and undervalue and overprice farmers’ output and inputs. Non-institutional credit has mushroomed because the modern agriculture demands modern inputs, as the cultivators who are unable to procure loans from cooperatives or banks depend on these agencies for agricultural and non-agricultural monetary requirements. Unfolding the flaws of the non-institutional credit **Vasavi** says “In addition to the binding of cultivator through agriculture input sales and credit, many agents also act as grain procurers. Having purchased inputs on credit, cultivators are often forced to sell their produce to these agencies, at prices that are below market rates, in order to clear their debts. Cultivators, as

buyers and clients are forced to submit to the dictates of the market. They do not have the same leverage as sellers of their produce”.

(b) Role of Extension Services

Extension services also have a vital role to play in the good performance of agriculture but in recent times the extension services are in a pauper condition. Policy failure was reflected in much larger emphasis on prices and subsidies than on non-price productivity augmenting factors such as research, extension and investment in infrastructure. (Vyas, 2004). Vyas further illustrates that, “The role of extension institutions in acting as a conduit between the scientists and users is practically non-existent. There are a few instances of private enterprises entering the field of extension of technology in raising crops and animal husbandry. However, the main source of information on modern inputs are the inputs suppliers who have a field day in ‘educating’ farmers in the use of purchased inputs. They, naturally have a vested interest in increasing the use of inputs they might be dealing in irrespective of their impact on productivity”. Studies at the ground level from all parts of the country, and more so from the regions where input use is increasing rapidly, suggest that there is a disproportionate use of all inputs on the farms, leading to increased liability of the farmers. The blame for the suicides of agriculturists in some parts of the country can be, at least partly, attributed to the failure of the extension agencies that could not check spurious inputs or guide the farmers in the proper use of inputs. In order to get rid of this problem the Government assigns a ‘Gram Sevaka’ or Agricultural Assistant, but the contact between the agricultural assistant and the cultivators isn’t always assured. Most agricultural assistant maintain contacts and good rapport with only large landowners. In addition to this, limited contact and supervision, much of the instructions for the use of agri-inputs (such as fertilizers, pesticides and seeds) are only in English and in some cases in Hindi. While a large proportion of cultivators are illiterate, even those literate in regional and local languages are unable to comprehend the instruction and directions for the use of these inputs. This limited contact between agricultural agents and small and marginal cultivators has its effect on agricultural condition. Cultivators integrate new methods and new inputs through observing others and with little or no formal instruction in the details of using the new inputs. This haphazard dissemination of agricultural knowledge and practices lends itself to problems in the context of crisis situation. Because of the improper dissemination of knowledge, the

cultivators suffer crop failure as well as they incur heavy debt. (Vasavi, 1999). Introducing with the poor information network for the farmers **Deshpande and Prabhu** say that, “the farmer does not get sufficient information from the extension worker, but it is rather the progressive farmer, who provides information to the farmer and this constitutes the best source as acknowledged by the farming community. The input dealer is another major source of information, and therefore, the interlocking of input and credit market is not an unexpected outcome. Usually, the input dealer is often blamed for acting as a moneylender and interlocking the credit and input market, but it is clear that when the state extension agencies fail to perform their task, the others step in to fill the void. This can be blamed on the inefficiency of the extension agencies and the media’s failure to provide farmers with the right information at the right time. New technology is adopted, with the help of information provided by the progressive farmer or input dealer. The extension worker comes after these two major sources”.

(c) MSP Mechanism

The government of India is declaring Minimum Support Price (MSP) for as many as 25 crops grown in the country. The major crops affected of the MSP are paddy, wheat, sugarcane and oilseeds. While computing the cost of the cultivation, the impracticable price structure is taken and the MSP so declared is not remunerative to the farmer. For e.g.: the MSP of paddy is remaining at the same level for the last three years. But, the inputs like seeds, pesticides, and electricity etc., costs have gone by 10-15 per cent every year. Even the agriculture labour wages are going up by 10-15 per cent. All these increases have not been taken into consideration while computing the cost of cultivation. It is strongly suggested that there should be a mechanism to exercise control on the prices of the inputs, taking into consideration of their cost of production and the procedure adopted in selling them to the farmers. (Prasad, 2006). Regarding the price risk (seasonality), **Ramaswami, Ravi and Chopra** argue “crops are harvested once in a year or at the maximum twice in a year. As a result, the commodity is stored and carried from the production points to the consumption points. Storage causes prices within a crop year to have a well-defined pattern. For instance, if there is only harvest in a year, prices will typically be minimum at the beginning of the marketing year and will move upwards to peak just before the beginning of the new marketing year. Price variability must, therefore distinguish between variability across years (annual) and variability within a crop year (seasonal). For farmers who

sell most of their crop at harvest it is the annual variability in harvest price that is of most concern. Variability in seasonal margin matters most to those agents who store the crop". Due to weak economic position, small and medium farmers sell their produce immediately after the harvest, when the wholesale price is at its lowest. These farmers lose considerable income in this way. The income foregone is very high for commodities like chillies, cotton, pulses and oilseeds where there is no public procurement. The Cotton Corporation of India (CCI), which is supposed to purchase cotton at the minimum support price (MSP), purchases only a very small percentage of produce that comes to the mandis. Very rarely have farmers benefited from the MSP for cotton. Usually, the minimum support price announced by government is less than the market price (Rao and Suri, 2006). The author further argues, "The farmers who withhold the product till higher market prices are obtained, tend to get higher prices than the MSP. But how many can do this? The traders and commission agents and other middlemen benefit more out of the existing agricultural marketing system". With the advancement of globalization and its impact on the stability in prices Suri opines that, "today the markets are becoming national and global, a low crop yield in a region does not lead to higher prices. Volatility in crop yields and low prices for several years together wreak havoc with farmers' lives. Farmers say that cultivation has become a gamble, because they are not certain whether they would get a good crop; and when they reap a good crop whether they would get a good price. Only the lending institutions, moneylenders, financiers and traders in fertilizers, pesticides and seeds seem to have gained out of the mounting debts of the farmers".

1.2 (iii) Impact of Indebtedness

(a) Reverse Tenancy

At present, small and marginal farmers are getting entrapped in the indebtedness up to such an extent that they are leasing out their land to large farmers so that they get a timely rent in return which can further be used to clear off their debts. "Vyas (1970) in Gujarat, Bandhyopadhyay (1975) for West Bengal, Gill (1989) from the census data of 1970-71 and 1980-81 for Punjab, Nadkarni (1976) based on a census survey of six villages of Maharashtra and Singh (1989) again from field data pertaining to Punjab, Rao (1992) and Haque & Parthasarthy (1992) all reach the conclusion that large tenants have emerged in the lease market, specially in

regions characterized by agricultural progress, commercialization of agriculture, and farm mechanization and what is more, they are displacing the smaller cultivators”. (Murty, 2004). Murty also discloses the reasons that why the large farmers are entering so prominently into lease market. He says, “however, demand is emerging from the bigger farmers. Those who are desirous of expanding their size of holdings through purchase of land but are unable to do so following land ceiling legislation, are satiating their demand by taking land on lease. And better-off cultivators are inclined to lease-in land because the increase in the unit of cultivation made possible by leasing-in of land enables the farmers to more adequately utilize their modern technical inputs. That is, the big farmers lease-in to optimize the use of capital resources. Meanwhile, those migrating to urban centers prefer to lease-out to farmers with significant means as they would be better able to take proper care of their lands and pay rents promptly”. Further, he also clarifies that the large farmers in the lease market is a disquieting development because:

- Taking advantage of tenancy laws the farmers can see that ownership and occupancy rights on tenanted lands under their control are conferred on them.
- They can take advantage of the laws and cause hardship to petty lessors and, in particular, to institutional lessors and undermine their interests.
- They can displace petty peasants from the lease market.
- They can expose poor tenants to a process of self-exploitation by vying with them for land in the lease market.

Murty also uncovers the competition amidst large farmers. “It appears that these farmers appeal to the need of the lessors for secure rental receipts by offering them fixed money, invariably in the beginning of the season, in return for lease of land. Petty peasants being less able to do so will lose out to large farmers in the competition for tenanted land”. **Bardhan (1976)** and **Singh (1989)**, have made the point that the capacity of the landless or the small owner to lease-in land is greatly reduced in an environment characterized by increased costliness and credit-intensity of new agricultural technology dependent on privately controlled irrigation, purchased inputs, in the context of a high imperfect credit market. **Murty** points out that “as agriculture becomes more and more mechanized with associated use of tractors, pump sets, oil engines, harvester combines and the like, there would be a need to put the machines to optimum use. In order to do so, leasing-in of land might become necessary for the farmers possessing these capital assets. The

more the capital assets the greater might be the need to lease-in especially when the possibility to expand one's holding through purchase of land exhausts. Therefore, we expect the significance of large tenants to be more in states where agricultural mechanization has taken deep roots". Murty's contention that large farmers be prohibited by law from entering in the lease market may not prove to be an ideal situation as many of the small and marginal farmers are often not able to lease in land to make their holdings economically viable as the lease terms are not favourable to them. As a result, they continue to remain at the receiving end with their uneconomic holdings. On the other hand, if they lease out their tiny holdings with favourable terms and conditions and enter into partnership with the lessee, it becomes beneficial for both. Finally, he suggests that a law should be framed against exploitive tenancy and not against leasing in land by large and medium farmers as such.

(b) Suicides

Indebtedness is not new to Indian agriculture, but suicides due to indebtedness are. On this account **Reddy and Galab** say, "Farmers' suicides have become a regular phenomenon and cannot be brushed aside as an event associated with drought or other natural disasters. Despite a good monsoon this year, farmers' suicides continue to occur in one state or the other. In some states like Andhra Pradesh, they are occurring regularly for the past 10 years irrespective of the rainfall situation, though drought has aggravated the numbers. Number of studies have tried to examine and understand the problem. Most of these studies have, rightly, identified household indebtedness as the main reason for the suicides. While indebtedness is the factor driving farmers towards suicide, the factors that are responsible for indebtedness are less understood. Suicides are the result of the deep-rooted agrarian and rural distress rather than a temporary phenomenon associated with institutional credit or rainfall. The increasingly regular incidence of suicides across the states points toward a brewing agrarian crisis in the country over the past decade". The farmers' suicides are being reported for the last 10 years and more. In 1997-98, around 300 cotton farmers of AP have committed suicides in Warangal district as per the media reports, and as on now the total number of suicides reported are more than 3000 in AP". The suicides are more prominent in states, which are agriculturally more developed, and they are the small and marginal farmers who are facing this problem severely. Regarding this **Srijit Mishra** comments "A brief review of issues indicates that the dependence on agriculture is largely

among marginal and small farmers and agricultural labourers. These groups also bear the brunt of the unavailability of water and its associated yield uncertainty. Linking of the national market with international markets has also increased price uncertainty, particularly in crops like cotton. The absence of a formal rural financial market also leads to a dependence on informal sources with a greater interest burden. The marginal and small farmer is, however, willing to experiment and take risks. But, the farmer is not able to visualize that a bad monsoon leading to a crop failure or a glut in the market can push him into indebtedness and a crashing of dreams". Suicides among the farming communities in states like Andhra Pradesh, Maharashtra and Karnataka have been hitting the headline for the last couple of years. While state governments attributes the deaths of crop failure due to bad weather, the media emphasizes the rising cost of cultivation mounting indebtedness and bottlenecks in agricultural marketing. A number of studies have been undertaken to explain these suicides, particularly in Andhra Pradesh and Karnataka. They vary not only in style and temper but also in their major findings. While one group attributes these suicides mainly to agro-economic problems like crop failure, indebtedness, etc., others highlight politico-economic issues, blaming the state for the tragedies. It is also suggested that the suicides are the outcome of historical factors associated with cotton cultivation. **(Mohanty and Shroff, 2004). Parthasarathy and Shameem (1998)** opined that though growing indebtedness is the main reason for the strain on the farmers, it does not entirely explain suicides since the social milieu in which an individual gets alienated from the family and society has to be also taken into account. **Sukhpal Singh** says on the suicides of farmers in Punjab that, "There is no doubt that farmers in Punjab in general spend too much on so-called non-productive (consumption) purposes. What makes matters worse is crop failure for which generally there is no relief, and the high cost of modern inputs. These two factors together account for 49 per cent of the reasons behind suicides. Crop failure has repeatedly happened in the cotton belt over the years until the advent of Bt cotton more recently. This is the belt known for farmer suicides in Punjab and cotton is the most expensive crop to grow, as it is highly dependent on modern market-based inputs. Outside farming, it has been found in studies of other situations in India that large expenses on healthcare and death and marriage ceremonies, which are met with high interest private debt, make families fall into poverty. This is no less relevant for rural Punjab where the entire health sector has been almost privatized leading to a high cost healthcare and the expenses on marriages and deaths are excessive".

1.2 (iv) Risk Management Strategies

Risk management strategies are of two types – ex-ante strategies and ex-post strategies. Ex-ante strategies include, tenancy, permanent labour contracts and specific crop management strategies like diversified farming and intercropping. Whereas, ex-post strategies include, self-insurance, credit and migration. Regarding self-insurance, **Ramaswami, Ravi and Chopra**, say, “self sufficiency relates to using such assets as bufferstocks; i.e., farmers accumulate stocks in periods of relative affluence and deplete these reserves to finance consumption expenditure during tough times. It is seen that the stock of bullocks have been widely used as an asset for self-insurance.” **Paxson and Chaudhari (1994)**, conclude that buffer stocks are responsible for the observed degree of smoothing. They also find that relatively large landholders tend to use crop inventory while relatively small and landless holders tend to use currency, because the large farmers are more equipped to store grains across seasons than poor farmers who find it easier to sell the grains upon harvest and use currency as smoothing mechanism. **Ramaswami, Ravi and Chopra** further say “Marriage-cum-migration contributes significantly to a reduction in the variability of household food consumption. Farm households afflicted with more variable profits tend to engage in longer distance marriage-cum-migration”. Taking into account land tenancy as a measure to mitigate risk, **Ramaswami, Ravi and Chopra**, are of the opinion that, though share-cropping is an inferior method in comparison to fixed-rent tenancy but still it is practiced. The reason that they give for their argument is that sharecropping emerges as a way to share, not just the output, but also the risk that is associated with the production. When a tenant pays a fixed rent, he is forced to bear the entire uncertainty of production. While under sharecropping, he is able to pass on some of this uncertainty to the landlord by varying the rent payable with the size of the output”. They further argue that, “as tenants are risk averse and they do not have perfect access to credit or insurance markets, therefore landlords can make money by attempting to insure them from agricultural uncertainty. But in doing so, the landlord must offer contracts that induce the right incentives”.

1.3 OBJECTIVES

Following are the objectives of my study –

1. To regionalize India according to levels of agricultural development focusing on agro-climatic and irrigation parameter and assess their impact on the instability of food grain yield and level of yield / net returns.
2. To analyze the variation in the instability of food grain yield, level of yield / net returns, degree of commercialization across states and assess its interrelationship incidence and the nature of indebtedness.
3. To examine the causes underlying incidence of indebtedness.

1.4 HYPOTHESIS

1. Indebtedness is a major reason for distress and it is mainly caused because of three factors -
 - Instability in yield
 - Level of yield / net returns

High cost of cultivation Instability in yield up to a great extent is a result of unavailability of moisture and the degree of agricultural development. The factors governing the availability of moisture availability are the extent of irrigation, irrigation intensity (indicating dry season orientation), proportion of area under tube well irrigation and rainfall. Besides this, the level of agricultural development is reflected through the yield, irrigation infrastructure, fertilizer use, villages electrified, credit societies and accessibility in the form of road density.

The level of yield / net returns is also dependent on the availability of moisture, instability in rainfall, fertilizer use and the rural infrastructure development (which includes, villages electrified, credit societies and accessibility in the form of road density).

High cost of cultivation, as quoted in the literature is often a feature of a highly commercial agriculture. This type of agricultural system has usually a high percentage of marketable surpluses (proportion of the sale of output out of the total output) and is

carried out with the major objective of profit maximisation, as opposed to income stabilisation. Usually a region with a high level of yield would eventually transform into one which orients itself commercially.

My first hypothesis is that, the first and the next two factors do not have a spatial correspondence. In other words, the areas where the instability of yield is high are the one that are not characterised with levels of yield / net returns and primarily has an economy of self sustaining agriculture with a low degree of commercialization. On the other hand, the areas which are stable in terms of yield are usually the ones where the commercial cultivation is practised on a large scale.

2. The second hypothesis is that in recent years, indebtedness is more related to the regions with degree of commercialization, which also manifests itself in incidents like farmers' suicides. In areas characterised with low levels of agricultural development, most of which have rain fed agriculture, farmers do face high instabilities in yield and production, but since their expectations are low in terms of future returns, their borrowings per household would be lower than that of commercial agriculture. In the former set of regions, the incidence of indebtedness is high due to the high cost of cultivation, whereas in the latter set of areas indebtedness may be a more permanent phenomenon, but would tend to be lower due to low levels of expected income. In these regions, people would also be expected to have developed some coping mechanisms to their distress situation.

1.5 CONCEPTUAL FRAMEWORK OF ANALYSIS

Green revolution in India had seen a spurt of commercialisation particularly with foodgrains primarily wheat and paddy. The era of globalisation and liberalisation, though not meant to affect the agricultural sector as directly as, say, the industrial or the financial sector, has brought in crucial changes in the dynamics of agriculture, particularly in most of the developed regions. It is to be noted that the recent cases of suicides have been reported from areas that have commercial agriculture, that include pockets of Andhra Pradesh, Maharastra, Karnataka, Punjab etc.

Under the above backdrop, the current study attempts to analyse to patterns and factors affecting farmers' indebtedness- and ultimately proposes to link it with the processes of development in the country.

1.6 METHODOLOGY

Initially, I have carved out the instability in food grain yield and then tried to regress it with the factors affecting it. The instability in food grain yield is taken for the 20 years period (1983-84 to 2002-03), and it is carved through the Cuddydellavalle's index of instability. The factors affecting the instability in food grain yield includes, the extent of irrigation, irrigation intensity, proportion of area under tube well irrigation, rainfall and a regional dummy reflecting the level of agricultural development. The indicator that constitute in the formation of the agricultural development index are, the food grain yield, irrigation infrastructure (extent of irrigation, irrigation intensity, and proportion of area under tube well irrigation), rural electrification (% of villages electrified), consumption of fertilizer (kgs/hectare), accessibility reflected in the form of road density and credit facilities (credit societies per 100 farmers' households). The instability in food grain yield is only taken because the food grains constitute the major crop of our agricultural economy. Analysis regarding the level of yield and net returns has been done and is statistically tested with the factors behind it which are, irrigation infrastructure (extent of irrigation, irrigation intensity, and proportion of area under tube well irrigation), instability in rainfall, rural electrification (% of villages electrified), consumption of fertilizer (kgs/hectare), accessibility reflected in the form of road density and credit facilities (credit societies per 100 farmers' households). Then, the degree of commercialization has been analyzed on the basis of percentage of marketable surplus out of the total output, and will be regressed with the cost of cultivation.

Finally, analysis of the nature and extent of indebtedness has been carried out. Within this, the incidence of indebtedness, the source of loans, purpose of loan, rate of interest across states as well as across farm-size are looked upon. Subsequently, the nature and extent of indebtedness has been correlated with the instability in food grain yield, level of yield / net returns and the degree of commercialization, so as to see, which of the factors affect indebtedness the most.

1.7 DATABASE

1. NSSO, 59TH Round, Situation Assessment Survey of Farmers' Households.
2. Indian Agricultural Statistics (various issues).
3. Statistical Abstract of India (various issues).
4. IMD Reports (various issues).

1.8 SCHEME OF CHAPTERS

The first chapter comprises, introduction, of the study, literature review, objectives made and the hypothesis framed. The second chapter looks at instability in the food grain yield, level of yield / net returns and the degree of commercialisation at the state level. The third chapter analyses pattern of indebtedness across states, farm size, sources of income and social groups. This chapter also focuses on the various purposes for which the loans were borrowed and the different sources of loans (across states as well as farm size). The fourth chapter links up the major determinants of indebtedness with indebtedness itself. The fifth chapter summarizes the entire study.

CHAPTER 2
ROOTS OF FARMERS' DISTRESS: VARIABILITY & LEVELS OF FOODGRAIN
PRODUCTION AND COST OF CULTIVATION

2.1 INTRODUCTION

Farmers' suicides are one of the clear signs of agrarian distress. In the recent times, suicides by farmers of Rayalseema and Telangana region in Andhra Pradesh and Vidarbha and Marathwada region of Maharashtra as well from the developed north-western belt has been an issue concerning the policy makers. The direct reasons for the suicides amidst farmers are psychological and thus not known. But most agree that this phenomenon is rooted to farmers' indebtedness which has to do with farmers' distress.

Hypothetically, farmers' distress could be linked with several aspects of agricultural development process. Three important factors influencing farmers' distress that is analysed in this chapter are:

1. the instability in productivity
2. level of yield/returns, and
3. cost of cultivation.

The major factors influencing instability in yield are –

1. extent of irrigation
2. irrigation intensity, which indicates dry season orientation
3. proportion of area under tube well irrigation
4. instability in rainfall.

Reasons that lead to the Variation in the Level of Yield/Returns are –

1. extent of irrigation
2. irrigation intensity
3. proportion of area under tube well irrigation
4. rainfall
5. fertilizer use, and
6. level of infrastructural development for agriculture (rural infrastructure index)

Reason(s) that lead to High Cost of Cultivation are

1. degree of commercialization

2.2 METHODOLOGY

For computing the instability in yield, the instability in yield of food grains is taken into consideration because it is the major crop of the agro economy of the country. The yield of food grains is derived using the area under food grains and the production of food grains for 20 years (1983-84 to 2002-03). The instability in the yield of food grains of all the states is calculated for 20 years (1983-84 to 2002-03) using the Cuddy Della Valle's Index of Instability. The Cuddy Della Valle's Index of Instability takes into account both the coefficient of variation (c.v) and the r^2 .

$$\text{Cuddy Della Valle's Index of Instability} = C.V*(1-r^2)^{0.5}$$

The coefficient of variation (c.v) of 20 years actual rainfall is used as an indicator indicating instability in rainfall. The level of agricultural development is derived by forming a composite index taking indicators such as food grain yield, extent of irrigation, irrigation intensity, proportion of area under tube well irrigation, fertilizers used per hectare of GCA, number of credit societies per 100 farmers' households, road density and percentage of villages electrified. The composite index of agricultural development was then converted into a dummy variable. These reasons are then regressed upon the instability in food grain yield.

Within the level of yield, the yield is for all the crops. The yield of all crops is derived by using the gross cropped area (GCA) and the total output (kgs) from the NSSO 59th round. Similarly, the level of returns (net returns/hectare) are calculated using the NSSO 59th round data. The Net Returns are derived by deducting the total expenses from the total receipts and then are divided by the gross cropped area (GCA). Amidst the reasons, which lead to the Variation in the Level of Yield/Returns, most of the reasons are similar to the ones, which lead to the Instability in food grain yield. Only the level of infrastructural development for agriculture is the one which is a different indicator leading to the variation in the Level of Yield/Returns. Again a composite index reflecting the level of infrastructural development for agriculture is made by taking number of credit societies per 100 farmers' households, road density and percentage of villages electrified. The reasons behind the Variation in the Level of Yield/Returns are finally regressed



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upon the level of yield and the level of net returns separately. The major determining factor behind high cost of cultivation is the Degree of Commercialization. The degree of commercialization is indicated through the share of the marketable surplus (Rs) out of the total output (Rs).

2.3 GENERAL OVERVIEW OF AREA, PRODUCTION AND YIELD OF FOOD GRAINS

Before focusing on the instability in food grain yield, it is mandatory for us to look at the trend of area, production and yield of food grains. Initially, for facilitation in analyzing the trend of area, production and yield, two categories of states have been made on the basis of mean annual actual rainfall of the past 20 years. The mean annual actual rainfall of the past 20 years of all the states was taken, and then an average of all the states was derived. It came up to 1576.9mm. On the basis of this average two categories of states were made, one category is of the moisture surplus states having mean annual actual rainfall above the average and the other category is of the moisture deficient states having mean annual actual rainfall below the average. (Table 2.1 & 2.2)

Table 2.1: Average Annual Rainfall (Moisture Deficient States)

States	Average Annual Rainfall (mm)
Rajasthan	473.39
Punjab	709.78
Haryana	712.15
Gujarat	720.17
Andhra Pradesh	931.18
Maharashtra	953.01
Tamil Nadu	986.94
Madhya Pradesh	1046.68
Jammu & Kashmir	1054.61
Uttar Pradesh	1069.49
Karnataka	1164.63
Bihar	1260.90
Himachal Pradesh	1421.01
Orissa	1441.65

Source: Statistical Abstract of India

Table 2.2: Average Annual Rainfall (Moisture Surplus States)

States	Average Annual Rainfall (mm)
West Bengal	1898.90
Manipur	1935.08
Nagaland	1935.08
Tripura	1935.08
Assam	2516.16
Meghalaya	2516.16
Kerala	2734.21
Sikkim	2785.32
Arunachal Pradesh	3709.33

Source: Same as Table 2.1

Amongst the moisture deficient states, there are 14 states and they are Andhra Pradesh, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu and Uttar Pradesh. Amidst the moisture surplus states, 10 states form the union, they are, the North-Eastern states of Arunachal Pradesh, Sikkim, Manipur, Nagaland, Assam, Meghalaya, & Tripura and the states of West Bengal and Kerala.

2.3 (i) Moisture Deficient States

There has been a fluctuation in area, production and yield of food grains across states but an estimated trend line over the 20 years period show that amidst the moisture deficient states, Andhra Pradesh, Bihar, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Orissa, Maharashtra, Rajasthan, Tamil Nadu are the ones in which the yield of food grains and the production of food grains has kept on increasing but the area under food grains has been continuously declining. (Figure 2.1 to 2.14) Orissa is an exception in this matter as here the yield of food grains has gone up at a very slow pace because of the decline in both the area as well as production of food grains. Amongst these states, Haryana is the one in which the average change in the food grain yield per year is the highest (regression coefficient being 74.438). Orissa is the state in which the average change in the food grain yield is the lowest (regression coefficient being 7.55). (Table 2.3).

In other north Indian states such as Jammu and Kashmir, Punjab and Uttar Pradesh, both the area and production of food grains have gone up along with the increase in the food grain yield over the 20 years period. (Figure 2.1 to 2.14). The three states of Punjab, Haryana and Uttar Pradesh, which are the food grain bowl of the country, amidst these three states, Haryana is the one in which the average change in the food grain yield per year is the highest (regression coefficient being 74.438), followed by Punjab (regression coefficient being 57.53) and Uttar Pradesh (regression coefficient being 35.92). Jammu and Kashmir is the one in which this average change in the food grain yield is the lowest (regression coefficient being 9.76). (Table 2.3).

Table 2.3: Trend Coefficients of Area, Production & Yield of Food Grains in Moisture Deficient States

States	Area	Production	Yield
Andhra Pradesh	-82.393	231.59	47.234
Bihar	-28.591	298.9	36.895
Gujarat	-95.452	29.088	27.878
Haryana	16.721	346.88	74.438
Himachal Pradesh	-3.865	23.295	33.611
Jammu & Kashmir	1.3886	10.519	9.7645
Karnataka	-13.118	158	23.003
Madhya Pradesh	-59.146	209.07	14.787
Maharashtra	-39.928	106.1	10.182
Orissa	-91.71	-38.561	7.5513
Punjab	52.202	512.86	57.53
Rajasthan	-37.721	276.9	25.471
Tamil Nadu	-62.767	29.573	35.545
Uttar Pradesh	126.89	935.33	35.917

Source: Calculated from Time series regression of area, production and yield of food grains

Fig. 2.1 (i)

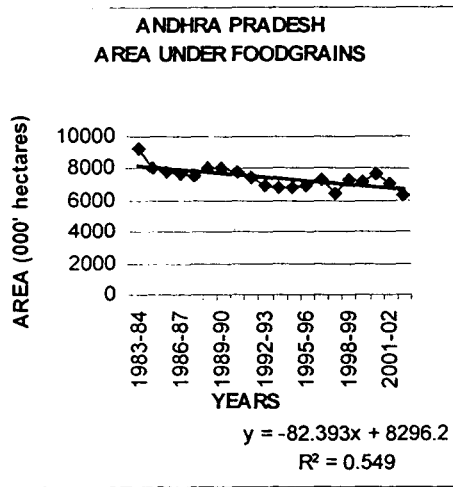


Fig. 2.1 (ii)

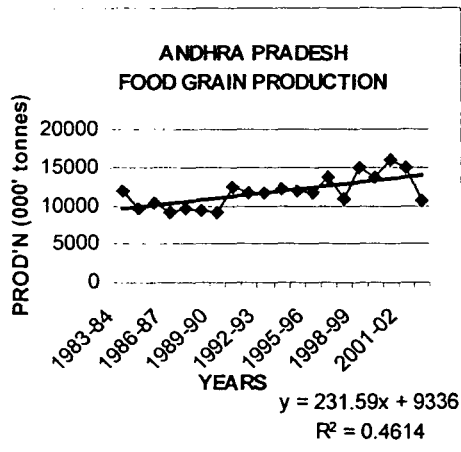


Fig. 2.1 (iii)

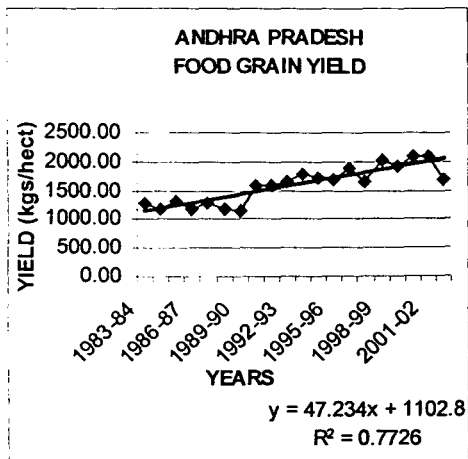


Fig. 2.2 (i)

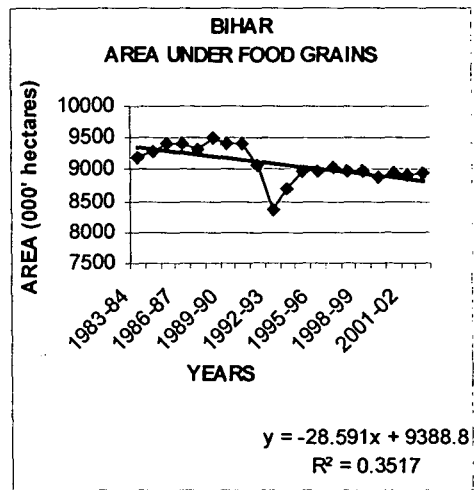


Fig. 2.2 (ii)

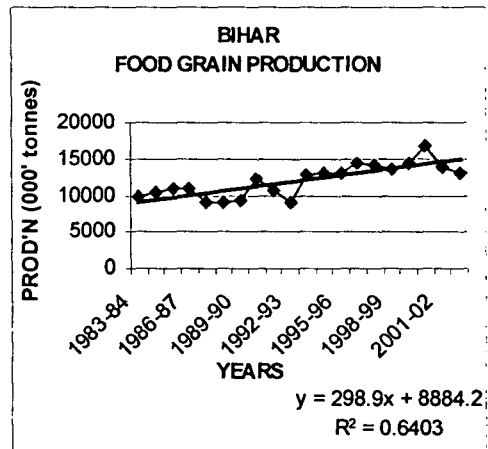


Fig. 2.2 (iii)

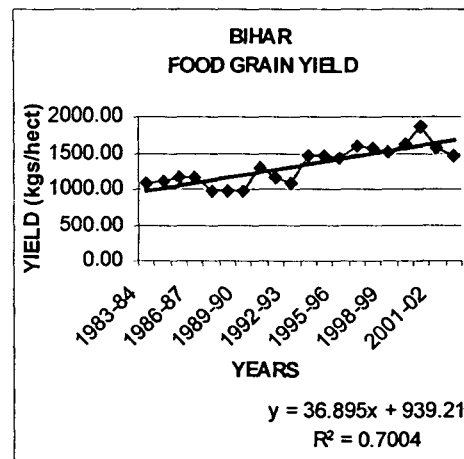


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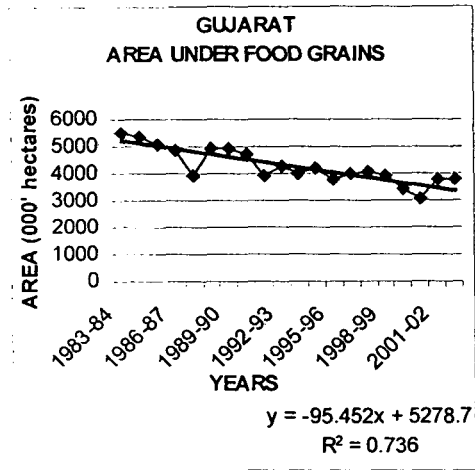


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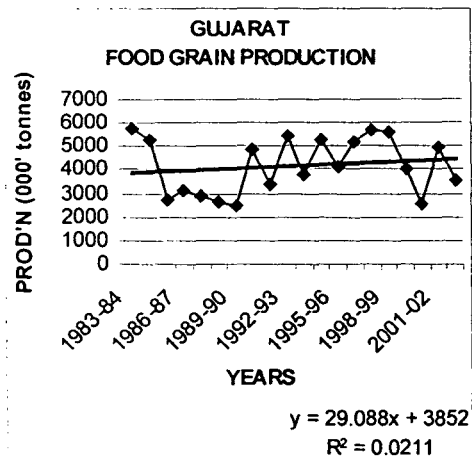


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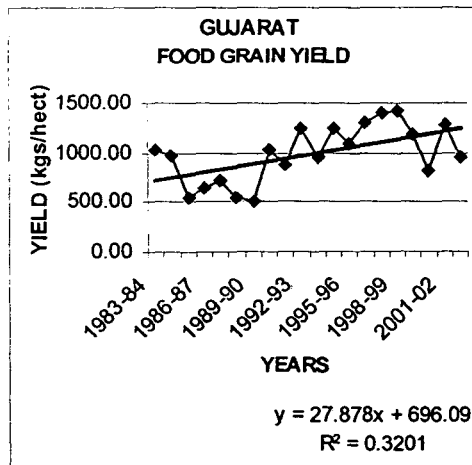


Fig. 2.4 (i)



Fig. 2.4(ii)

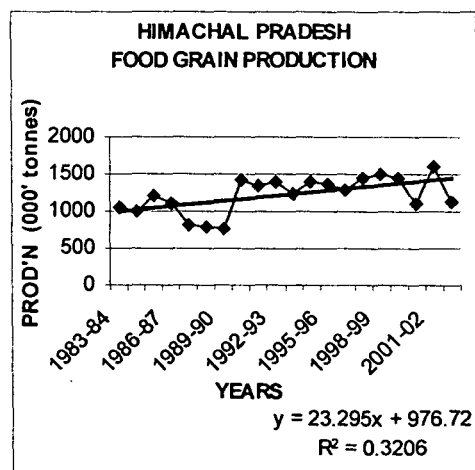


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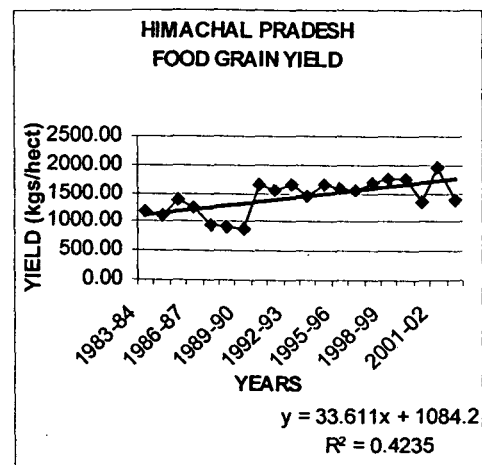


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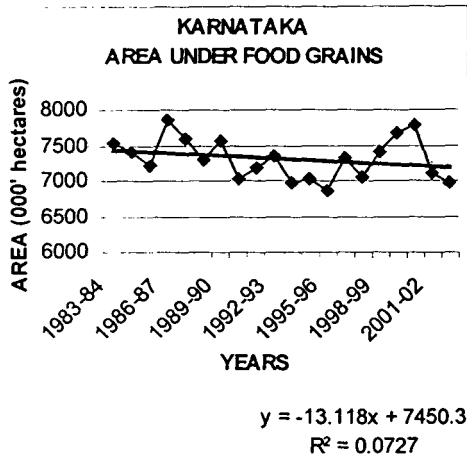


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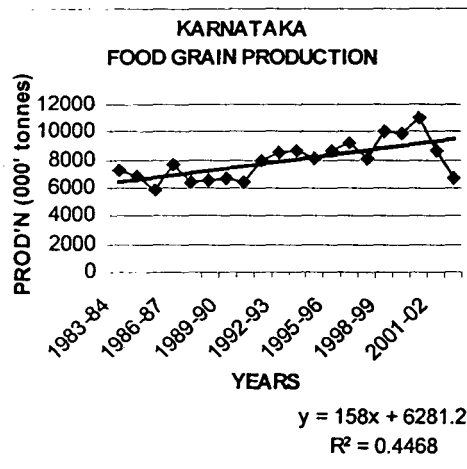


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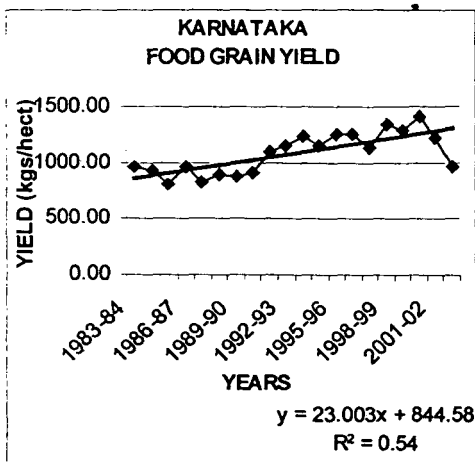


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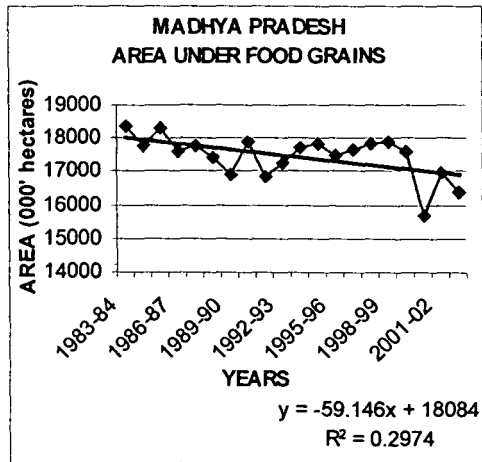


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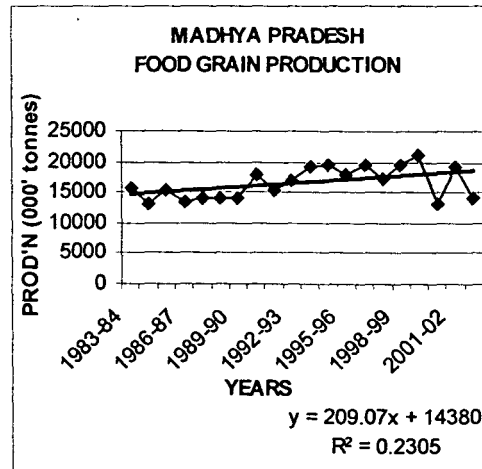


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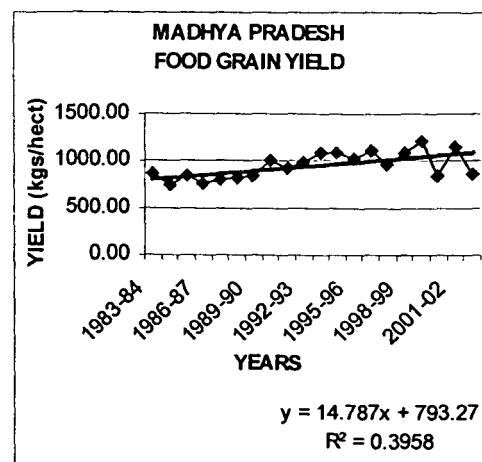


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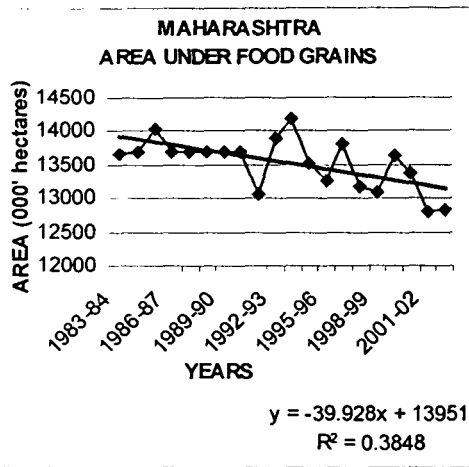


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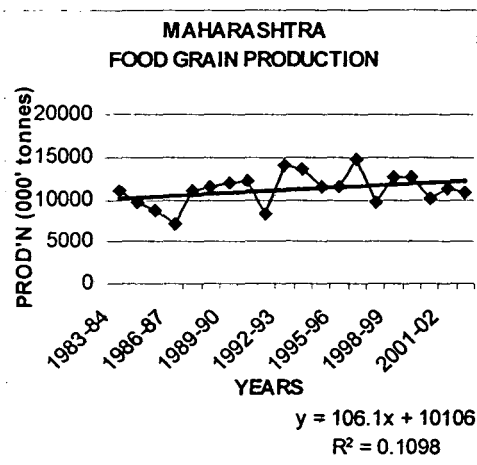


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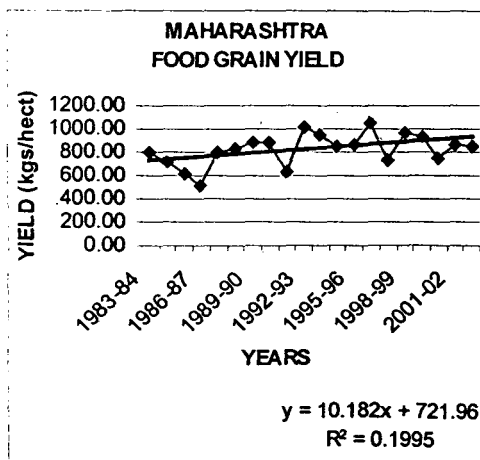


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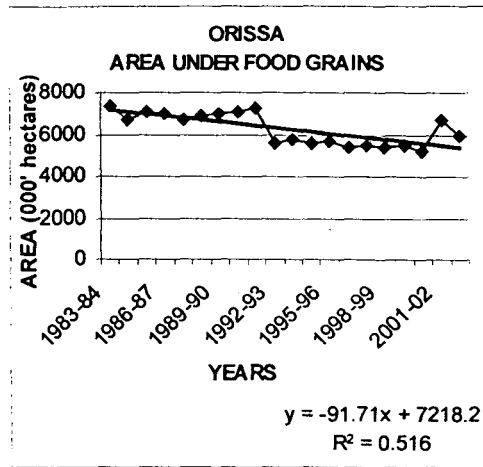


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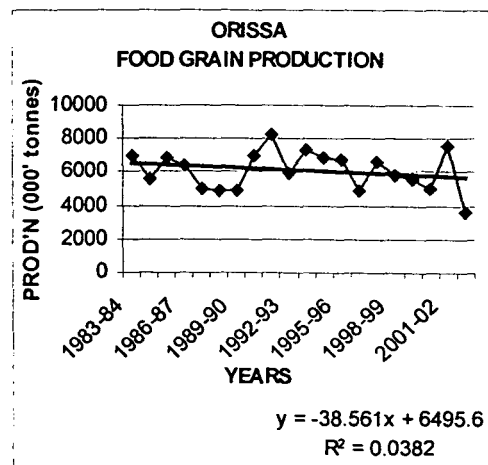


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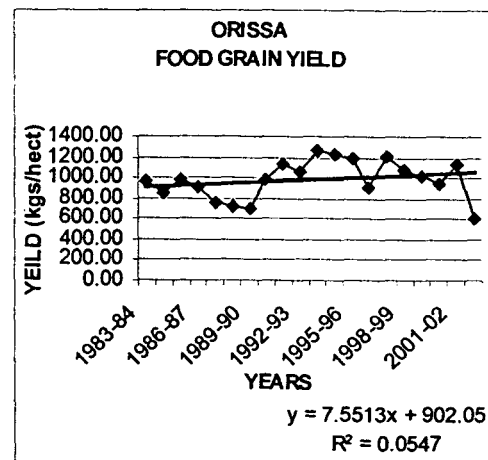


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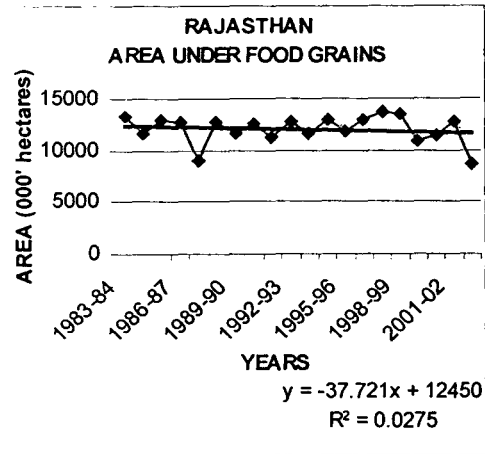


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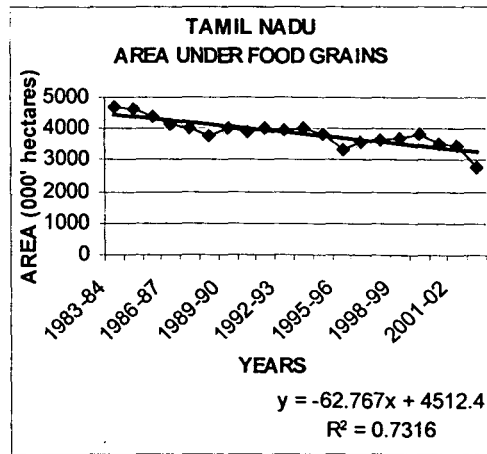


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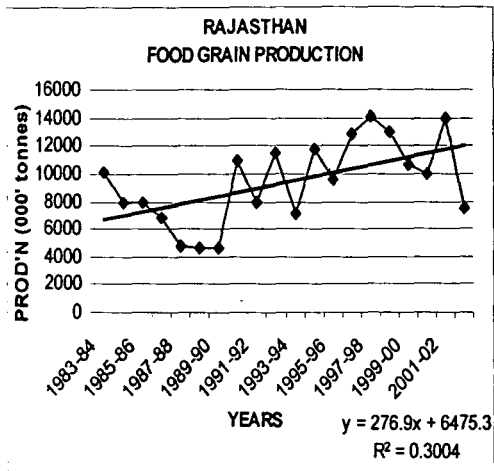


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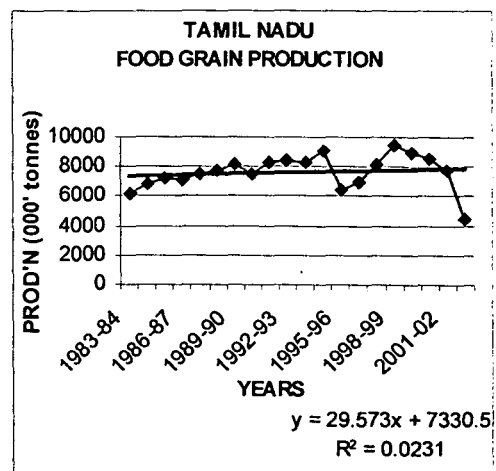


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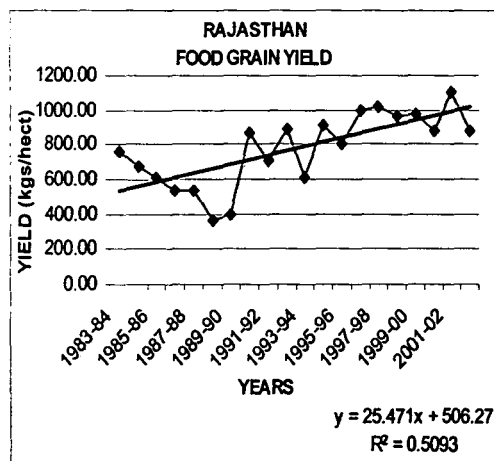


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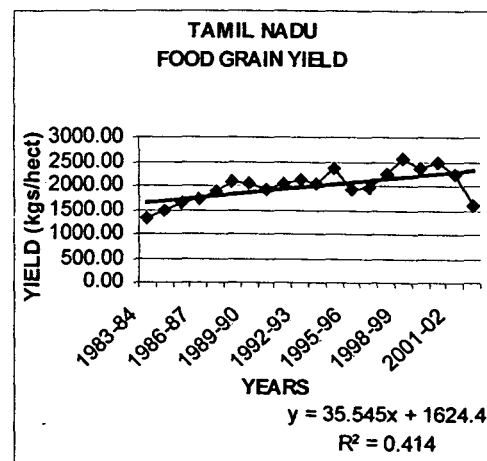


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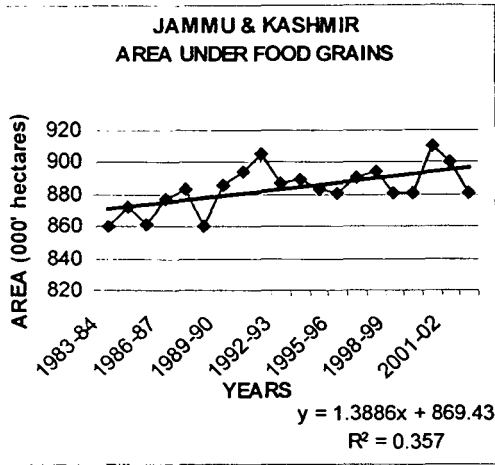


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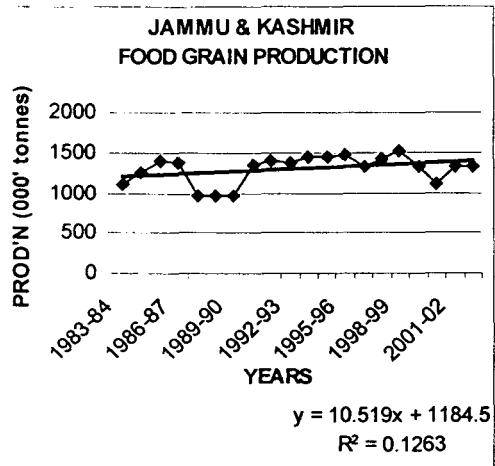


Fig. 2.11(iii)

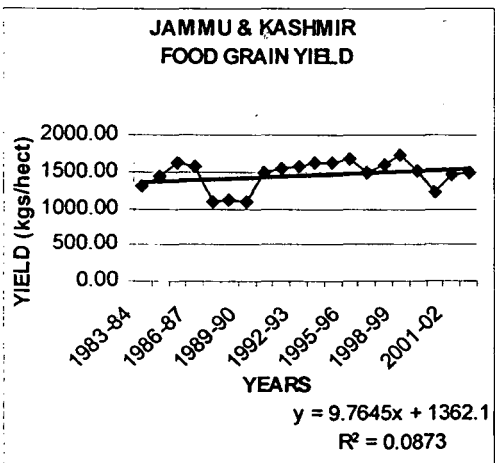


Fig. 2.12 (i)

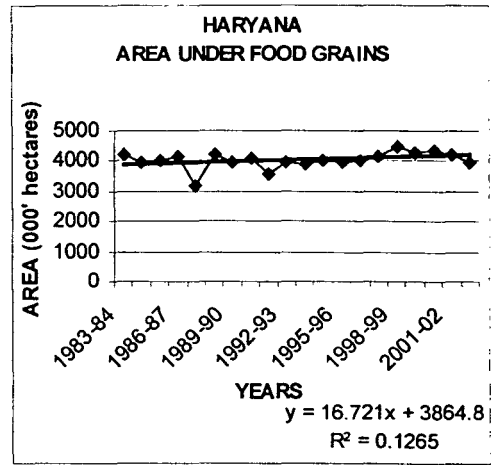


Fig. 2.12 (ii)

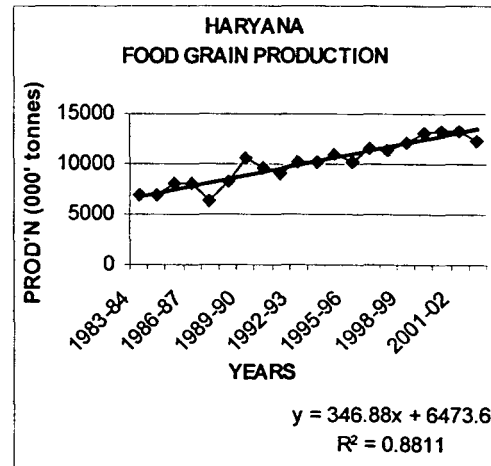


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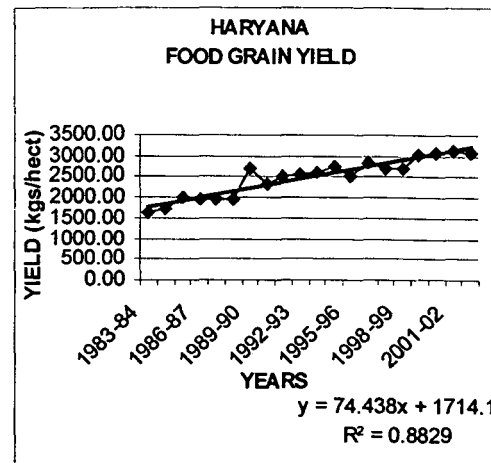


Fig. 2.13 (i)

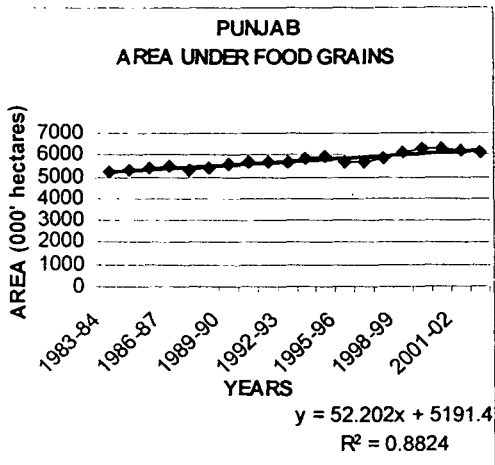


Fig. 2.14 (i)

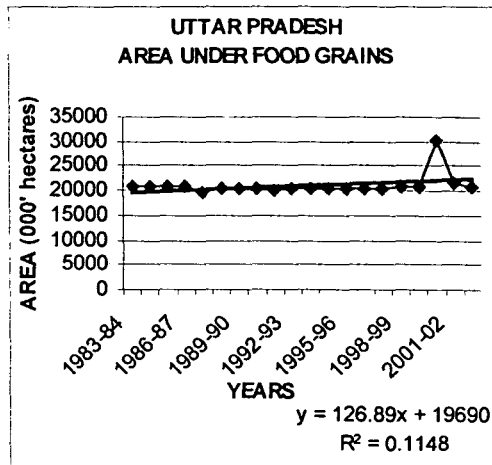


Fig. 2.13 (ii)

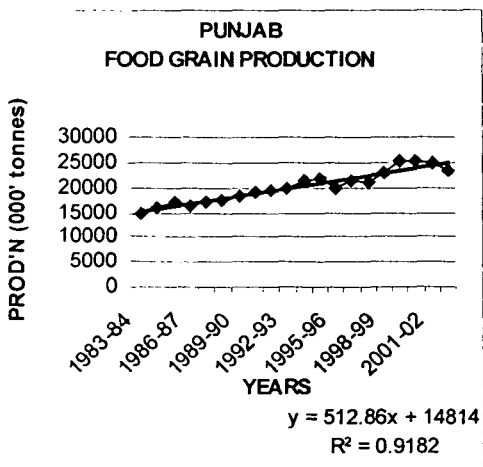


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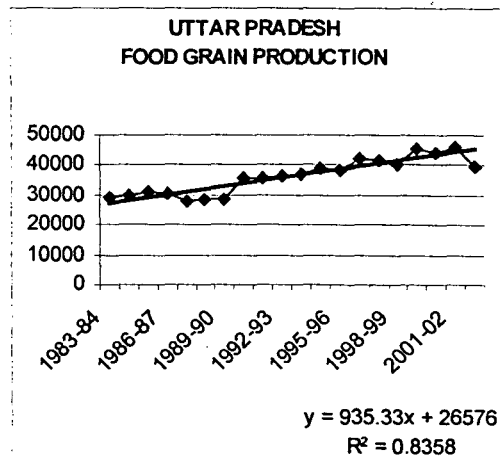


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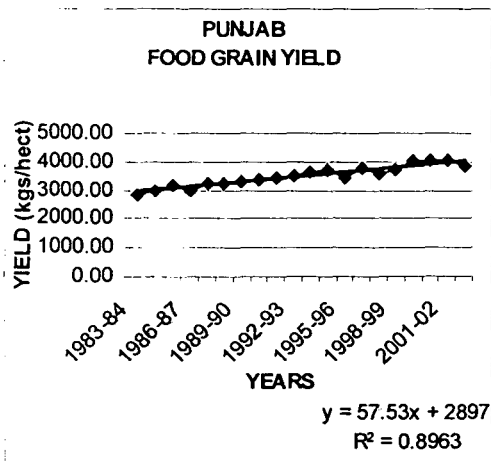
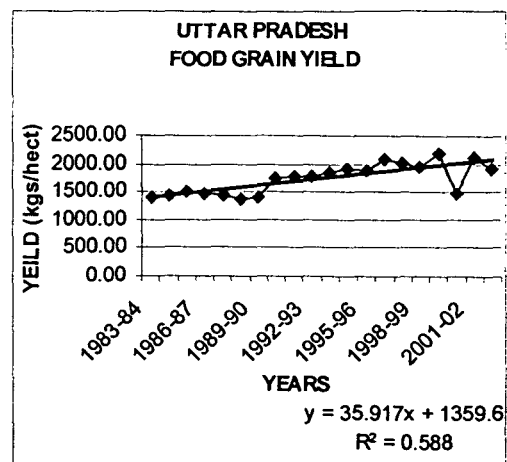


Fig. 2.14 (iii)



2.3 (ii) Moisture Surplus States

In the moisture surplus states too all the states exhibit a wide fluctuation in the area, production and yield of food grains. Here again an estimated trend line over the 20 years period show that all the states have shown an increasing trend in food grain yield over the past 20 years. Kerala, Manipur, Meghalaya, Sikkim and Tripura are the states where the food grain yield and production over the past 20 years has increased but the area under food grain has been on a continuous decline. (Figure 2.15 to 2.23) Over here, only Kerala is an exception, as unlike other states it has experienced a slow pace in the increase of food grain yield because both the area and production of food grains in this state has been on a decline. Amongst these states, Tripura shows the highest average change in the food grain yield per year (regression coefficient being 50.044), whereas Sikkim shows the lowest average change in the food grain yield per year (regression coefficient being 11.585) (Table 2.4).

States such as Arunachal Pradesh, Assam, Nagaland and West Bengal show an increasing trend in the area, production and yield of food grains. The highest per year average change in the food grain yield amidst these states is witnessed in West Bengal (regression coefficient 49.896) and the lowest average change in the food grain yield per year was witnessed in Arunachal Pradesh (regression coefficient being 10.42) (Table 2.4).

Table 2.4: Trend Coefficients of Area, Production & Yield of Food Grains in Moisture Surplus States

States	Area	Production	Yield
Arunachal Pradesh	0.5902	2.5594	10.42
Assam	7.4975	73.677	23.646
Kerala	-23.58	-28.871	28.045
Manipur	-0.2288	4.8715	31.681
Meghalaya	-0.2613	4.1816	33.264
Nagaland	4.6981	13.548	44.248
Sikkim	-0.4066	0.3697	11.585
Tripura	-1.6151	10.731	50.044
West Bengal	27.555	373.1	49.896

Source: Same as Table 2.3

Fig. 2.15 (i)

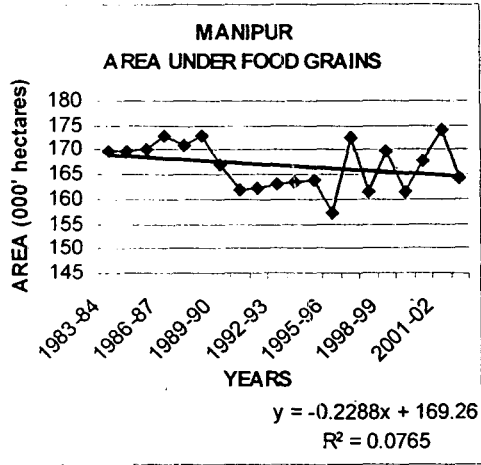


Fig. 2.15 (ii)

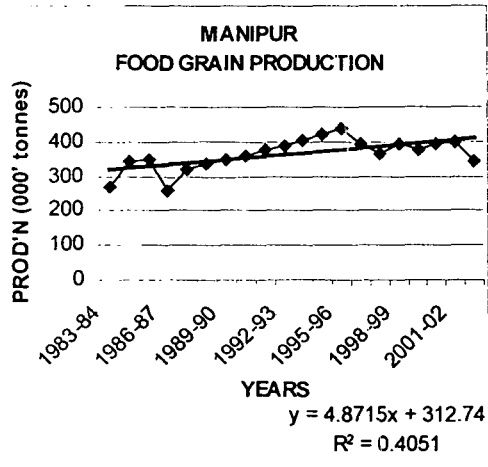


Fig. 2.15 (iii)

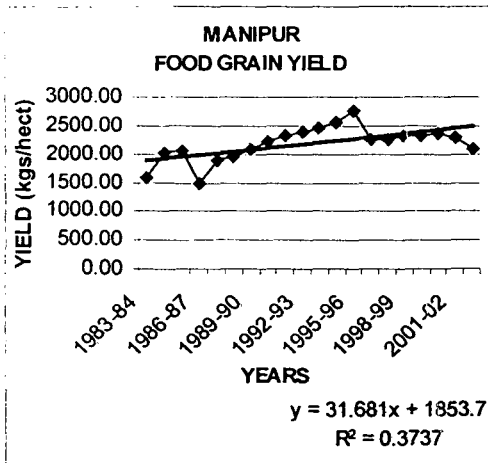


Fig. 2.16 (i)

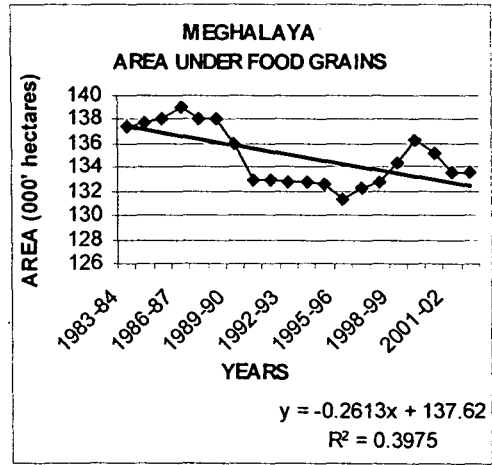


Fig. 2.16 (ii)

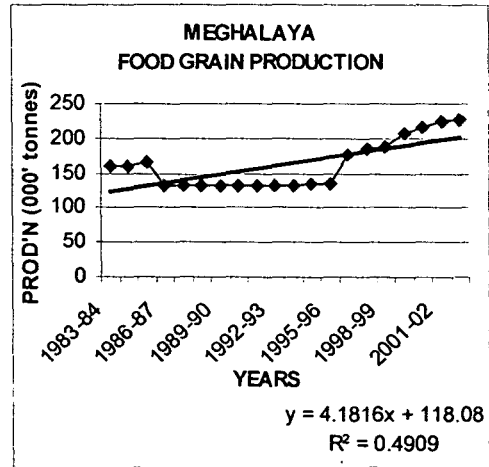


Fig. 2.16 (iii)

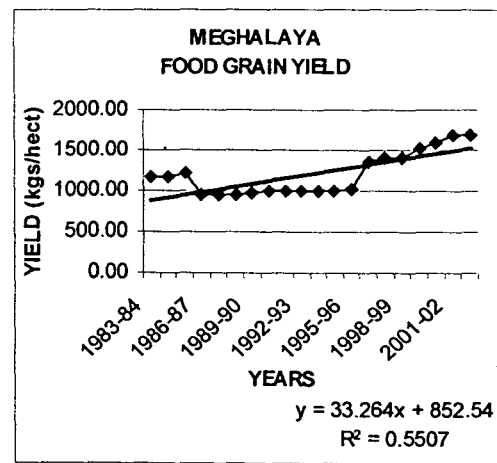


Fig. 2.17 (i)

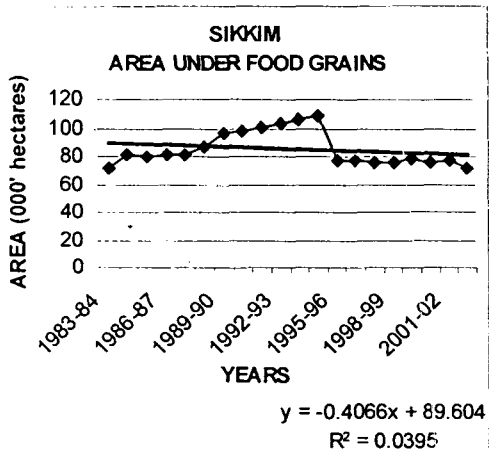


Fig. 2.17 (ii)

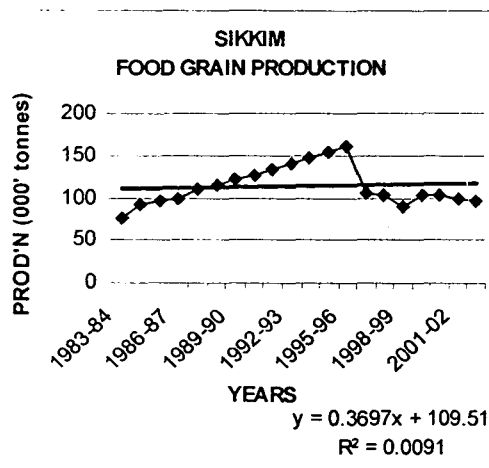


Fig. 2.17 (iii)

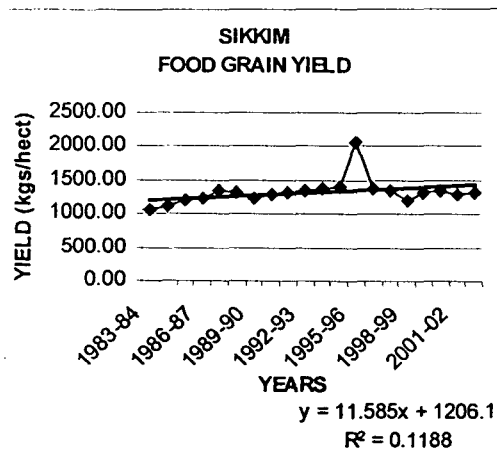


Fig. 2.18 (i)

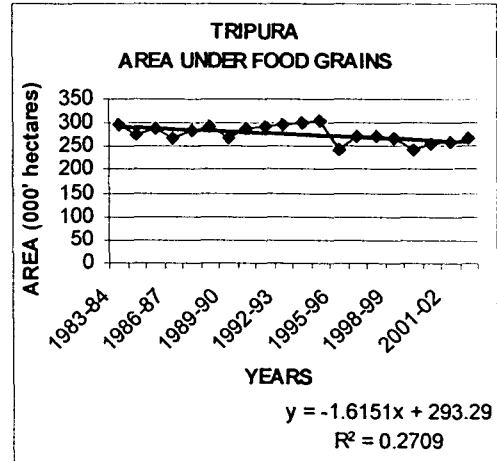


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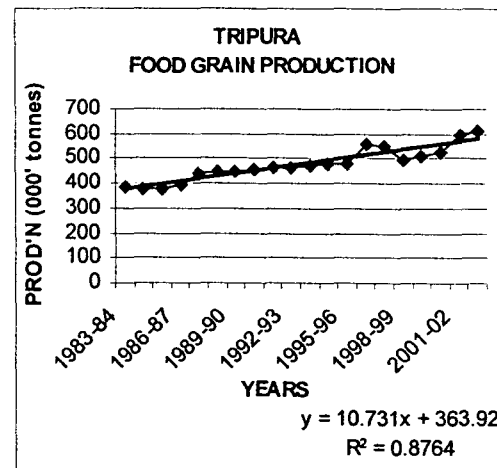


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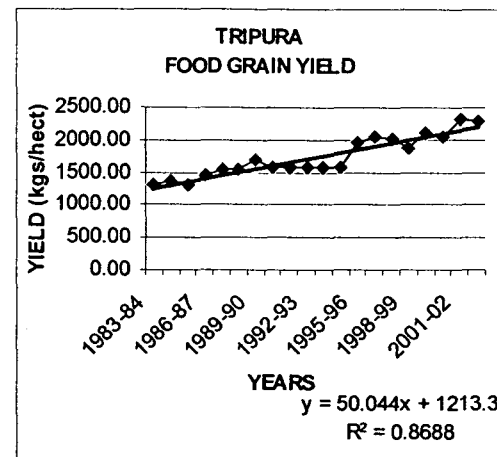


Fig. 2.19 (i)

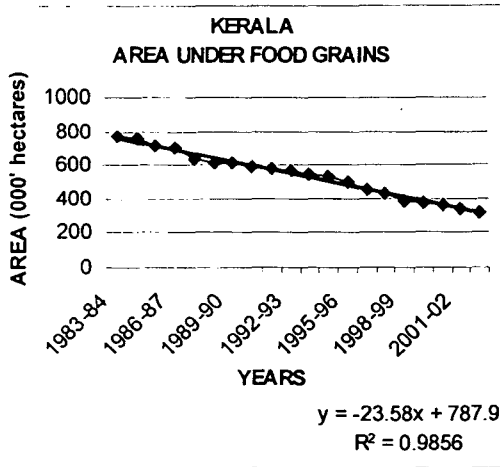


Fig. 2.19 (ii)

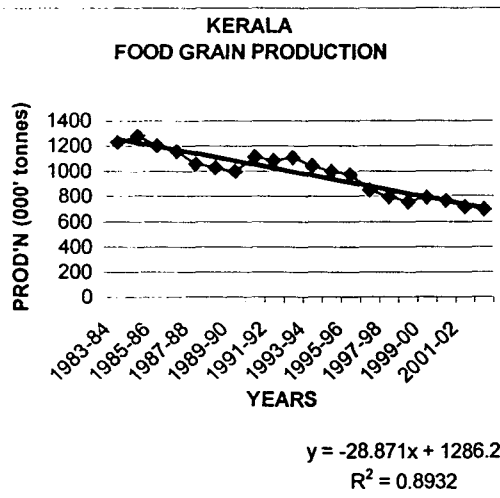


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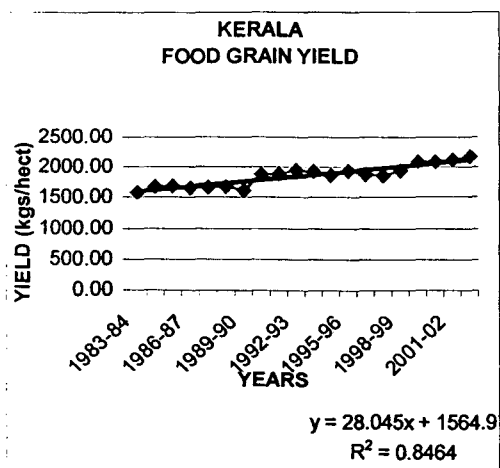


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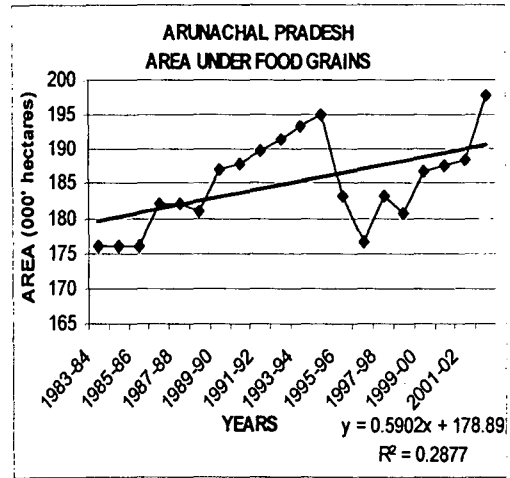


Fig. 2.20 (ii)

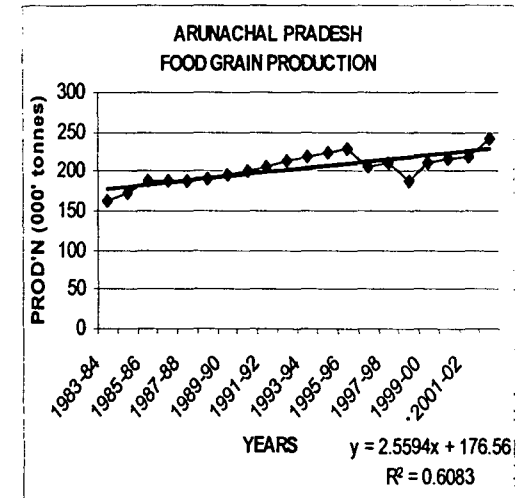


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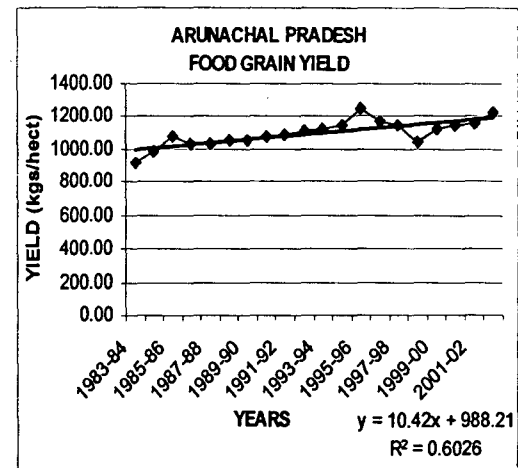


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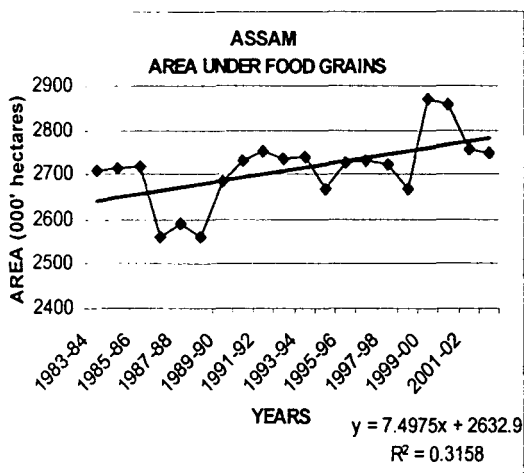


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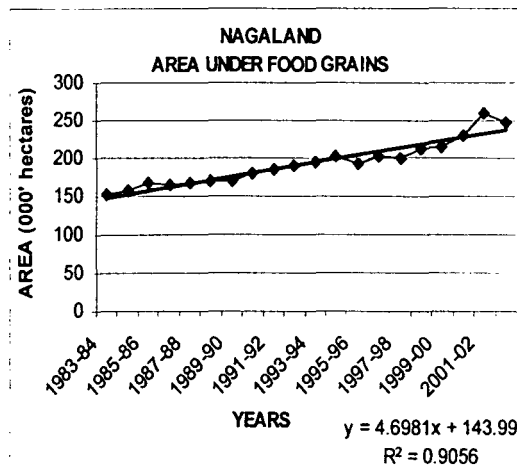


Fig. 2.21 (ii)

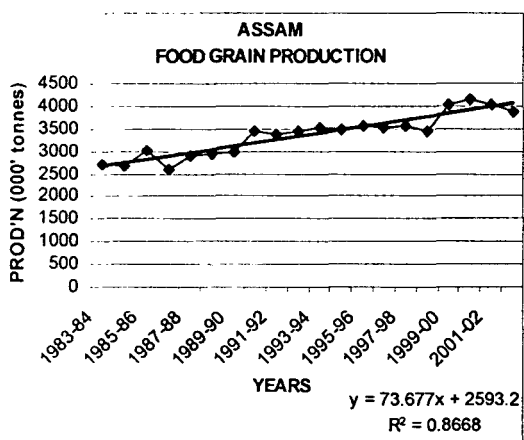


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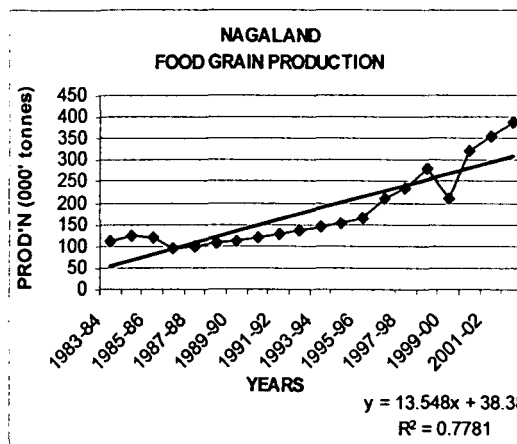


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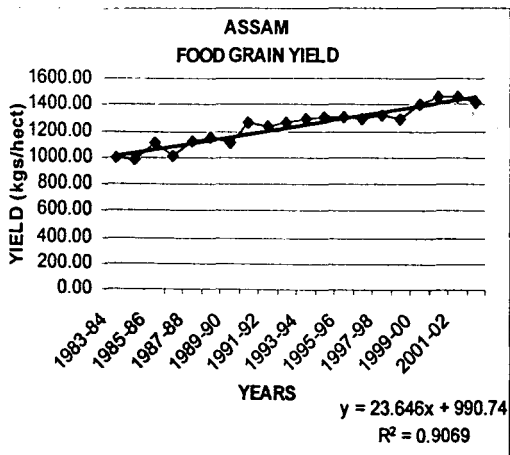


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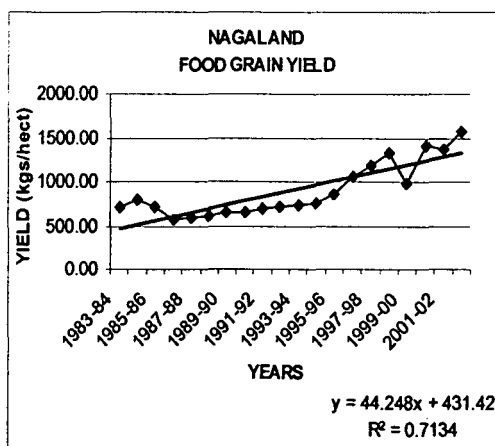


Fig. 2.23 (i)

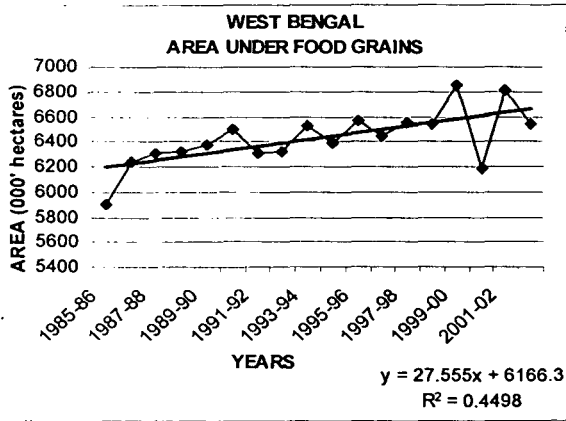


Fig. 2.23 (ii)

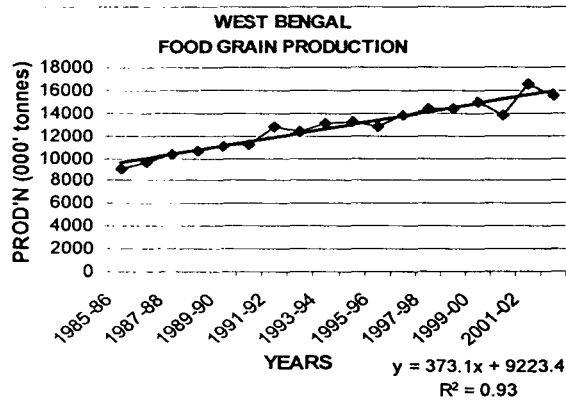
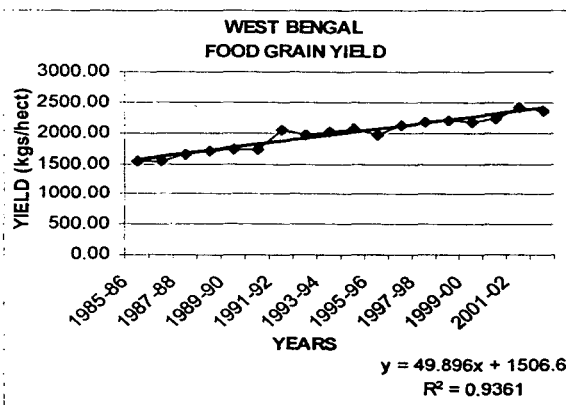


Fig. 2.23 (iii)



2.4 INSTABILITY IN AREA, PRODUCTION AND YIELD OF FOOD GRAINS

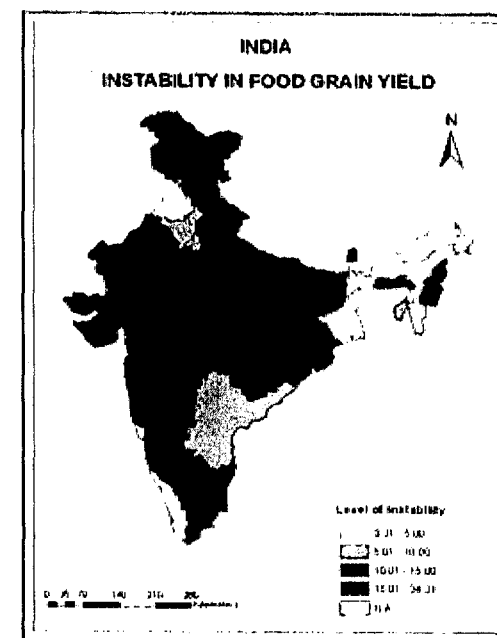
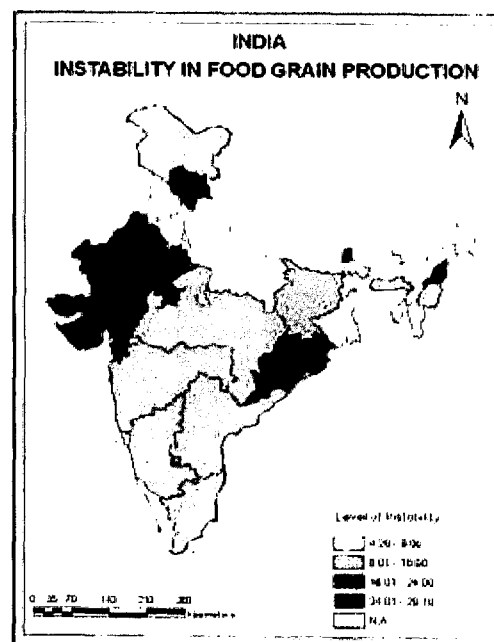
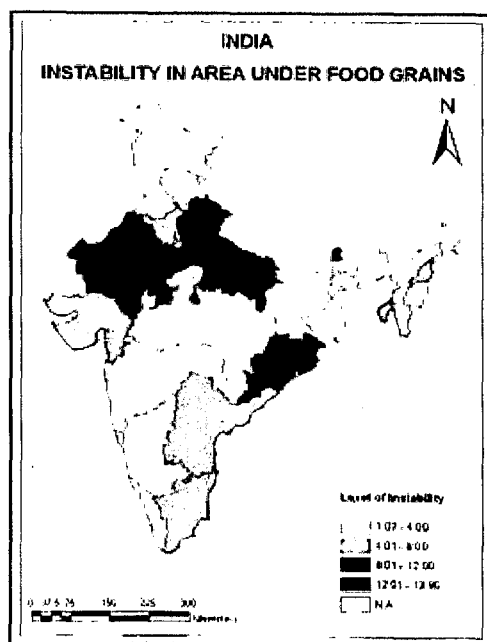
The instability in area under food grain is very less across all the states (Fig. 2.24). The instability in area under food grains varies from 1.07 in Himachal Pradesh to 13.90 in Sikkim. The in area under food grains was highest only in Sikkim, Uttar Pradesh, Rajasthan and Orissa; in Haryana, Gujarat, Orissa and Tamil Nadu it was comparatively lesser. In rest of the states the instability in area under food grain was very low (Fig. 2.24).

Corresponding to the instability in area under food grain, the instability in food grain production is quite high. It varies from 4.28 in West Bengal to 28.18 in Gujarat. The instability in food grain production is highest in Gujarat and Rajasthan followed by Himachal Pradesh and Orissa. It is lowest in Punjab, Haryana, Uttar Pradesh, West Bengal and almost all the northeastern states (except Manipur and Nagaland). Across all the central Indian and south Indian states it is very low (Fig. 2.24).

On the other hand, the instability in food grain yield is quite similar to the instability in food grain production (Fig. 2.24). It varies widely across the states (Fig. 2.24). The instability of food grain yield is lowest in Punjab (3.31) and highest in Gujarat (24.31). It is also very high in the states like Himachal Pradesh, Rajasthan, Gujarat, Orissa and Nagaland (Fig. 2.24). Compared to these states, it is relatively lesser in the north Indian states of Jammu & Kashmir, Uttar Pradesh and Bihar; in the central Indian state of Madhya Pradesh and in the southern Indian states of Maharashtra, Karnataka and Tamil Nadu. Amidst the southern Indian states it is lowest in Kerala followed by Andhra Pradesh. It was found to be the lowest in West Bengal and most of the Northeastern states (Fig. 2.24).

So, it is quite clear that the instability in area under food grains has remained static over the years, but the instability in production has attained variation and consequently, the instability in yield has also shown tremendous variation.

Fig 2.24 Statewise variation in Instability in Area, Production & Yield of Food Grains in India



2.4 (i) Factors affecting the Instability in Yield of Food Grains

The factors that affect the instability in yield of food grains are as follows –

- instability in rainfall
- extent of irrigation
- area under tube well irrigation
- irrigation intensity.

Since the above mentioned factors are the regressors and the instability in food grain yield the regressand, therefore, we have regressed them upon the instability in food grain yield. The regression results are mentioned below. (Table 2.5 (i & ii))

Table 2.5 (i): R² Value

R	R Square	Adjusted R Square	Std. Error of the Estimate
.394	.155	-.033	5.86841

(Constant), INSRAIN, TWI, IRRINT, EXTIRR

Table 2.5 (ii): Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	11.905	8.887		1.340	.197
EXTIRR	.003	.109	.013	.031	.975
IRRINT	-.015	.082	-.058	-.181	.859
TWI	-.097	.101	-.347	-.956	.352
INSRAIN	.160	.167	.225	.955	.352

Dependent Variable: INSGYIELD (instability in food grain yield)

Independent Variables:

INSRAIN (instability in rainfall)

EXTIRR (extent of irrigation)

IRRINT (irrigation intensity)

TWI (area under tube well irrigation)

As we can see that none of the regression coefficients are significant. The R² value is also too low 0.155. Thus, the results show that the above mentioned factors do not lead to instability in food grain yield and there may be other factors which may be affecting the instability in food grain yield. Also, the results may be insignificant because of the fact that the number of observations are too less (24).

Since the regression results are insignificant, so in order to have a generalized picture, a cross tabulation between the instability in food grain yield & instability in rainfall and instability in food grain yield & extent of irrigation is made. The codes used in the cross tabulation for instability in food grain yield, instability in rainfall and extent of irrigation are as follows.

Theoretically, there is a positive relationship between instability in food grain yield and instability in rainfall. But the results in the cross tabs say something else. (Table 2.6). The codes specifying the instability in food grain yield and instability in rainfall are mentioned below. (Table 2.6).

Table 2.6: Codes used in Cross Tabulation

Instability in Food Grain Yield	Instability in Rainfall	Extent of Irrigation	Code	Severity
Below 10	Below 10	Below 25%	1	Low
10-20	10-20	25%-50%	2	Moderate
20-30	20-30	50%-75%	3	High
Above 30	Above 30	Above 75%	4	Very High

Source: See table 16 & table 19 in Appendix I

Table 2.7: Cross tabulation of Instability in Rainfall and Instability in Food Grain Yield

Codes		Instability in Food Grain Yield				Total
		1.00	2.00	3.00	4.00	
Instability in Rainfall	1.00	1	1	0	0	2
	2.00	4	10	0	1	15
	3.00	1	2	0	1	4
	4.00	2	0	1	0	3
Total		8	13	1	2	24

The Table 2.7 shows that there are two states where the instability in rainfall is low (Assam and Meghalaya) and amidst these states in Assam the yield is also low and in Meghalaya it is moderate. Fifteen states of India have moderate level of instability in rainfall (Andhra Pradesh, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Mizoram, Nagaland, Orissa, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal) and out of them ten states (Bihar, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Nagaland, Orissa, Sikkim, Tamil Nadu and Uttar Pradesh) have moderate level of instability in food grain yield, four states (Andhra Pradesh, Kerala, Tripura and West Bengal) have low instability in food grain yield and Mizoram had very high level of instability in the yield of food grains. There are four states in which the instability in rainfall is high (Himachal, Jammu & Kashmir, Punjab and Rajasthan) and within these states three states (Punjab, Himachal and Jammu & Kashmir) exhibit low to moderate instability in food grain yield, whereas Rajasthan shows very high instability in terms of food grain yield. Gujarat, Haryana and surprisingly Arunachal Pradesh has very high instability in rainfall and out of them Arunachal Pradesh and Haryana show low instability in food grain yield while Gujarat has high instability in the same. Theoretically speaking, there is a positive relationship between the instability in rainfall and instability in food grain yield but the results of cross tabulation between instability in rainfall and instability in food grain yield do not match the theory.

On the other hand, the cross tabulation between the extent of irrigation and instability in food grain yield somewhat corresponds to the theory which says that there exists a negative

relationship between the extent of irrigation and the instability in food grain yield. The results are as follows. (Table 2.8).

Table 2.8: Cross tabulation of Extent of Irrigation and Instability in Food Grain Yield

Codes		Instability in Food Grain Yield				Total
		1.00	2.00	3.00	4.00	
Extent of Irrigation	1.00	4	6	0	1	11
	2.00	2	6	1	1	10
	3.00	0	1	0	0	1
	4.00	2	0	0	0	2
Total		8	13	1	2	24

There are eleven states where the extent of irrigation is low (Arunachal Pradesh, Assam, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Sikkim and Tripura) and amidst these states only Mizoram is the one in which the instability in food grain yield is very high, while in rest of the states it varies from low to moderate level. The extent of irrigation is at a moderate level in ten states (Andhra Pradesh, Bihar, Gujarat, Jammu & Kashmir, Manipur, Nagaland, Orissa, Rajasthan, Tamil Nadu and West Bengal) and within these ten states, there are six states (Bihar, Jammu & Kashmir, Manipur, Nagaland, Orissa and Tamil Nadu) exhibit moderate level of instability in food grain yield and two states Andhra Pradesh and West Bengal show low level of instability in food grain yield. Uttar Pradesh is the only state which has high level of extent of irrigation and it has got a moderate level of instability in food grain yield. Punjab and Haryana are the two states in India which have got the highest extent of irrigation and consequently they also exhibit a low level of instability in food grain yield. So, concluding, we can say that the negative relationship between the extent of irrigation and instability in food grain yield is a bit reflected in the cross tabulation results.

2.5 LEVEL OF YIELD OF FOOD GRAINS

The yield of food grains at the All India level is 1505.29 kgs/hectare. It varies from 336 kgs/hectare in Madhya Pradesh to 3828 kgs/hectare in Punjab. Along with Punjab, Haryana also has a very high yield level of 3103 kgs/hectare. In states such as Kerala, Manipur, Tripura and West Bengal the yield level is highest. Apart from Madhya Pradesh, the yield levels are lowest in Karnataka (949 kgs/hectare), Maharashtra (846 kgs/hectare), Orissa (716 kgs/hectare) and Rajasthan (873 kgs/hectare). In rest of the states the yield levels are moderate ranging between 1000 to 2000 kgs/hectare. (Fig. 2.25)¹.

The major factors that affect the yield level are the extent of irrigation, area under tube well irrigation, irrigation intensity, fertilizer usage, instability in rainfall and rural infrastructure for agriculture. Regressing these factors upon the level of yield the results are as follows (Table 2.9 (i & ii)).

Table 2.9 (i): R² Value

R Square	Adjusted R Square	Std. Error of the Estimate
.770	.689	429.21895

(Constant), FERT, RII, IRRINT, RAIN, TWI, EXTIRR

Table 2.9 (ii): Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-802.320	581.470		-1.380	.186
EXTIRR	38.173	8.622	1.152	4.428	.000
IRRINT	3.692	5.092	.113	.725	.478
TWI	-8.682	7.081	-.286	-1.226	.237
RII	211.552	104.787	.275	2.019	.060
RAIN	.608	.149	.642	4.077	.001
FERT	-.312	3.292	-.022	-.095	.925

Dependent Variable: YIELD

Independent Variable:

EXTIRR (extent of irrigation)

IRRINT (irrigation intensity),

TWI (area under tube well irrigation),

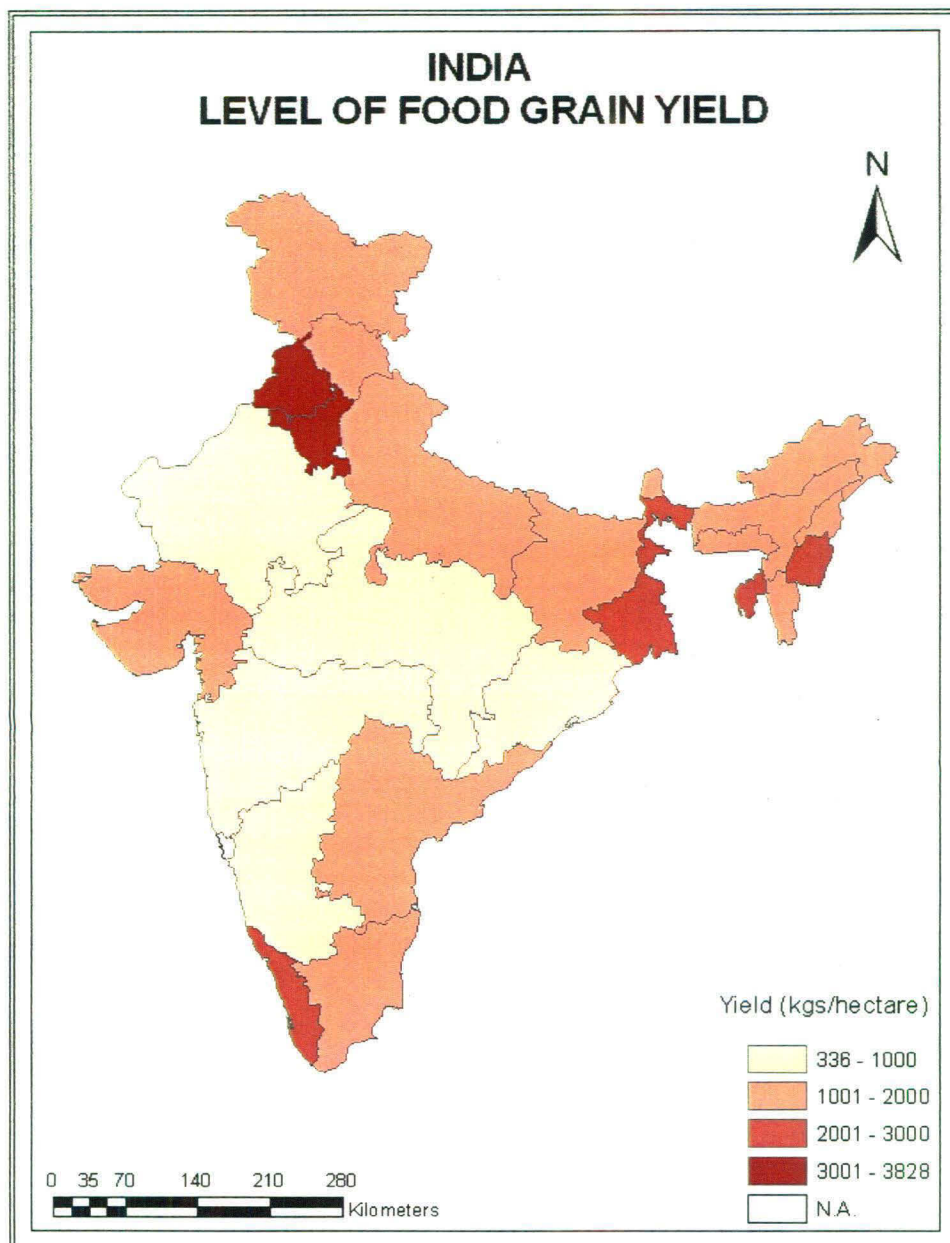
FERT (fertilizer usage),

RII (rural infrastructure index) & RAIN (average annual rainfall)

¹ In Fig 2.25 the states of Jharkhand, Chhattisgarh and Uttaranchal are clubbed with Bihar, Madhya Pradesh and Uttar Pradesh respectively. This has been done because for carrying out the regression analysis of the factors affecting the level of food grain yield, the data for some of the indicators wasn't available for Jharkhand, Chhattisgarh and Uttaranchal.

The R^2 is 0.770 and regression coefficient of the extent of irrigation and rainfall comes out to be significant. At the local level all these parameters are important in influencing the yield levels but at the state level only these parameters come out to have a significant relationship with the yield levels.

Fig. 2.25: Statewise Level of Food Grain Yield



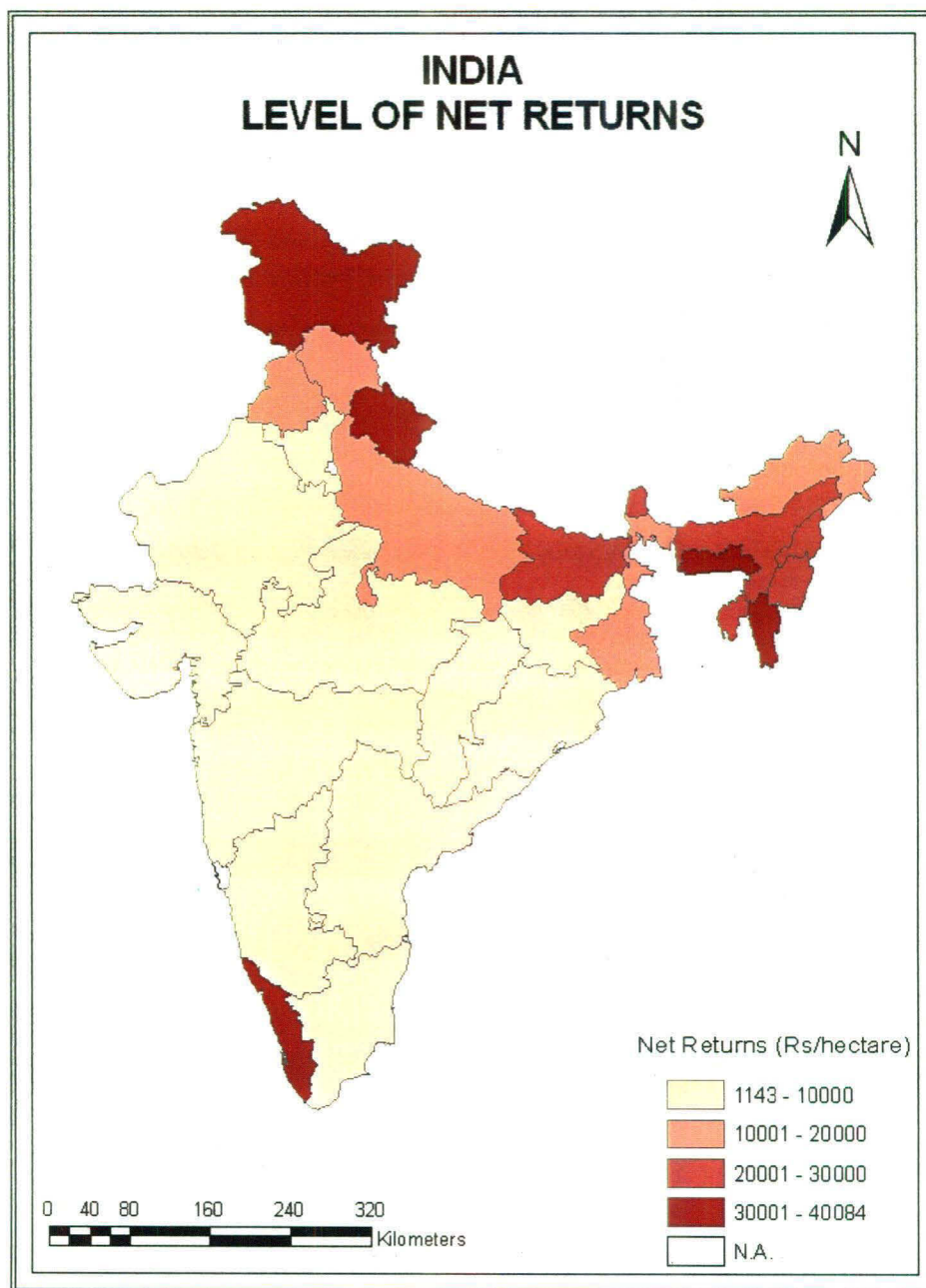
2.6 LEVEL OF NET RETURNS

Looking at the net returns across the states, we find out that it varies between Rs. 1142/hectare in Rajasthan to Rs. 40084/hectare in Kerala. (Fig. 2.26). The All India figure of the Net Returns/hectare is Rs. 9866 per hectare. Besides Uttaranchal, the states which receive the highest net returns are Jammu and Kashmir, north eastern states of Meghalaya, Mizoram; and Kerala. States like Manipur, Sikkim, Bihar, Tripura and Nagaland receive comparative lesser returns than the previous category of states. The states like Himachal Pradesh, Punjab, Uttar Pradesh, West Bengal and Arunachal Pradesh has moderate level of net returns and this is irrespective of the fact that their yield level has been attaining good numbers (Fig. 2.26). In rest of the Indian states the level of returns are low.

The R^2 value comes out to be .411 indicating that 41.1 % of the variation in the net returns are caused because of these factors.

The regression coefficients of none of the independent variables (except instability in rainfall) are significant. Here again, the non-significance of regression coefficients of other parameters may be because of the fact that the year in which the survey was conducted (2002-03) was a drought year and therefore, the returns might have got affected. And here too, the regression coefficient of the instability in rainfall comes out to be significant, thereby making a point that the natural factors can affect the level of returns comparatively more than the man-made causative factors.

Fig. 2.26: Statewise variation in Level of Net Returns



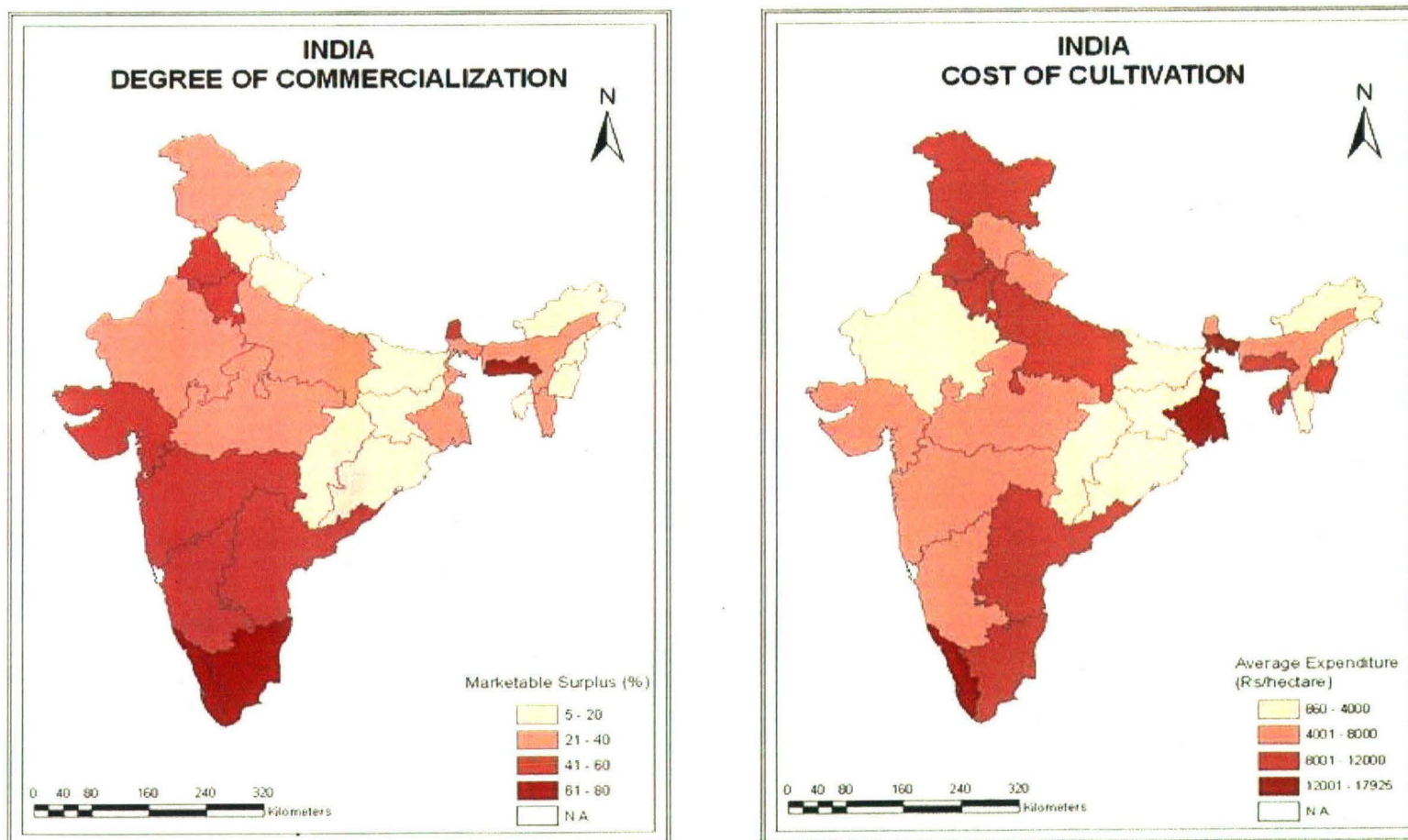
2.7 DEGREE OF COMMERCIALIZATION

The degree of commercialization is the proportion of marketable surplus out of the total output in rupees terms. The degree of commercialization is positively related with the cost of cultivation, i.e., if the degree of commercialization is high then the cost of cultivation is also high. Looking at Fig. 2.27, the degree of commercialization is highest in Kerala, Tamil Nadu and Meghalaya; followed by the southern Indian states of Maharashtra, Karnataka and Andhra Pradesh; Gujarat and the northern Indian states of Punjab and Haryana. It was found to be at a moderate level in Jammu & Kashmir, Rajasthan, Uttar Pradesh, Madhya Pradesh, West Bengal, Assam, Mizoram and Tripura. The degree of commercialization was lowest in the states such as Himachal Pradesh, Uttarakhand, Bihar, Jharkhand, Chhattisgarh, Orissa, Arunachal Pradesh, Nagaland and Manipur (Fig. 2.27).

2.8 COST OF CULTIVATION

Finally, shifting our attention towards the cost of cultivation. The per hectare expenditure on cultivation at the All India level is Rs. 6943. The expenditure on cultivation ranges from Rs. 860.34/hectare in Mizoram to Rs. 17925/hectare in Kerala. Apart from Kerala the per hectare expenditure on cultivation is also the highest in West Bengal and Uttar Pradesh (Fig. 2.27). In comparison to these states, the northern Indian states of Punjab, Haryana and Jammu & Kashmir; the southern states of Tamil Nadu and Andhra Pradesh; and the northeastern states of Tripura and Manipur have relatively less per hectare expenditure on cultivation. The northern Indian states of Himachal Pradesh, Uttarakhand; the central Indian state of Gujarat; the southern Indian states of Karnataka and Maharashtra; and the northeastern state of Assam and Sikkim have moderate cost of cultivation. Rest of the states which mainly fall in the central, eastern and northeastern region has low per hectare expenditure on cultivation (Fig. 2.27).

Fig. 2.27: Statewise Variation in Degree of Commercialization & Cost of Cultivation



Earlier, it was hypothesized that the degree of commercialization is the major factor driving the high cost of cultivation. So, a regression has been run between the percentage of marketable surplus (which indicates the degree of commercialization) and the per hectare expenditure on cultivation (which reflects the cost of cultivation). The results which have come are as follows. (Table 2.10 (i & ii)).

Table 2.10 (i): R2 Value

R	R Square	Adjusted R Square	Std. Error of the Estimate
.504	.254	.224	3825.63741

(Constant), COMMERCIALIZATION

Table 2.10 (ii): Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3600.022	1379.446		2.610	.015
COMMERCIALIZATION	100.783	34.567	.504	2.916	.007

Dependent Variable: EXPENDITURE (per hectare expenditure on cultivation)

Independent Variable:

COMMERCIALIZATION (degree of commercialization indicated through the % of marketable surplus out of the total output)

In our results the r^2 value indicates that 25.4 % of variation in the cost of cultivation is being explained by the degree of commercialization. The regression coefficient of the degree of commercialization is significant, so, we can say that if the marketable surplus increases by 1% then the cost of cultivation will increase by Rs. 100.78/hectare.

2.9 COMMERCIALIZATION OF AGRICULTURE AND ITS IMPACT

As mentioned in chapter 1, our first hypothesis states that wherever the commercialization of agriculture is carried out on a large scale, in those states the instability in food grain yield is less and the level of yield/net returns higher and vice-versa. Testing this hypothesis no significant relationship was found. But a cross tabulation has been made between the degree of commercialization and the instability in food grain yield & level of yield/net returns to show the impact of commercialization on both these aspects. The results of the cross tabulation² are present in table 2.12 to table 2.14. The codes specifying the degree of commercialization, the instability in food grain yield and level of yield and net returns are mentioned in table 2.11.

Table 2.11: Codes used in Cross Tabulation

Instability in Food Grain Yield	Level of Yield (kgs/hectare)	Level of Net Returns (Rs/hectare)	Degree of Commercialization (%)	Codes	Severity
Below 5	Below 1000	Below 10000	Below 20	1	Low
5-10	1000-2000	10000-20000	20-40	2	Moderate
10-15	2000-3000	20000-30000	40-60	3	High
Above 15	Above 3000	Above 30000	Above 60	4	Very High

Source: See, table 9, table 19, table 20, table 35 & table 36 in appendix I

² In carrying out these cross tabulations, the number of observations for the degree of commercialization was restricted to 24 as the states of Jharkhand, Chhattisgarh and Uttaranchal were clubbed with Bihar, Madhya Pradesh and Uttar Pradesh. This was done because the data for rest of the parameters were not available for the newly formed states.

2.9 (i) Commercialization and Instability in Food Grain Yield

Table 2.12: Cross Tabulation between Degree of Commercialization and Instability in Food Grain Yield

		INSTABILITY				Total
		1.00	2.00	3.00	4.00	
COMMERCIALIZATION	1.00	1	0	2	3	6
	2.00	2	1	3	1	7
	3.00	1	2	3	1	7
	4.00	1	0	2	0	3
Total		5	3	10	5	23

COMMERCIALIZATION 'degree of commercialization'

INSTABILITY 'instability in food grain yield'

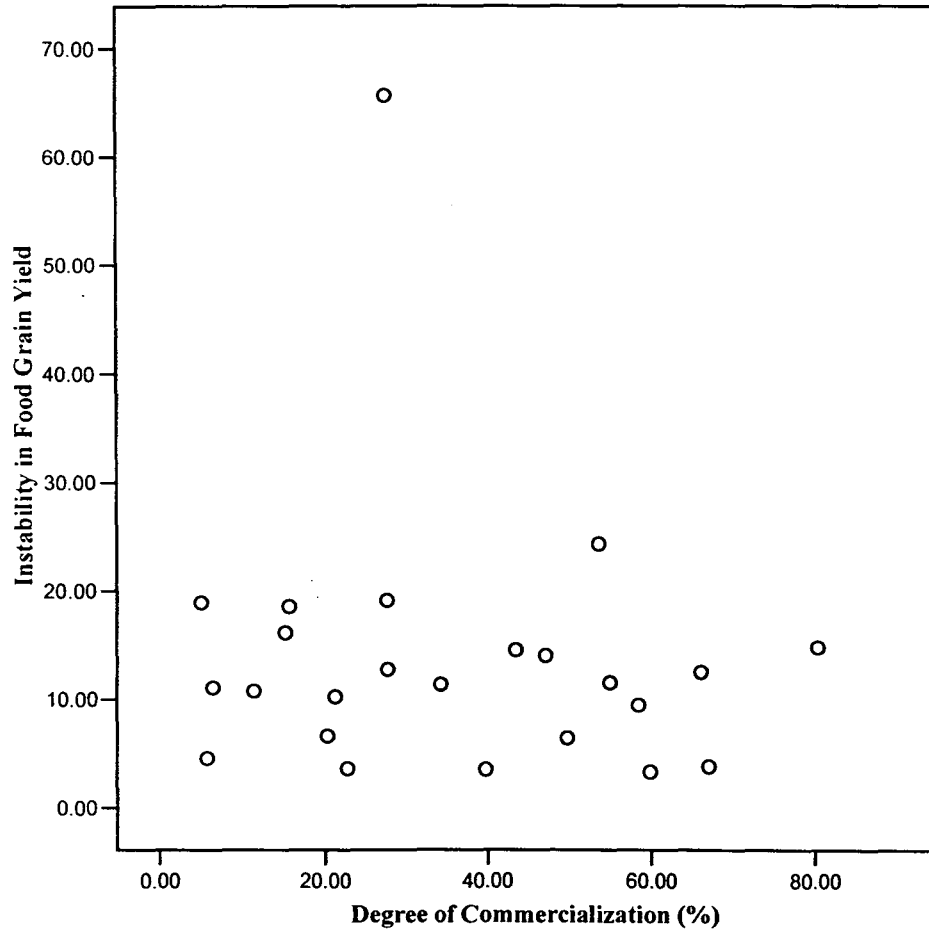
The table 2.12 presents the cross tabulation between commercialization and instability in food grain yield³. This table shows that there are six states where the commercialization is low (Arunachal Pradesh, Bihar, Himachal Pradesh, Manipur, Nagaland and Orissa) but except in Arunachal Pradesh, the instability in food grain yield is high to very high, whereas in Arunachal Pradesh it is low. There are seven states in which the commercialization is moderate (Assam, Jammu & Kashmir, Madhya Pradesh, Rajasthan, Tripura, Uttar Pradesh and West Bengal) and there are three states (Jammu & Kashmir, Madhya Pradesh and Uttar Pradesh) where the instability in food grain yield is high.

In Rajasthan, which has moderate level of commercialization, over there the instability in food grain yield is very high. There are seven states which have high level of commercialization, and they are Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Punjab and Sikkim and out of these states three states (Andhra Pradesh, Haryana and Punjab) have low to moderate instability in food grain yield. But there are three states which still have high level of instability (Karnataka, Maharashtra and Sikkim). Gujarat which has high level of commercialization has a very high level of instability, which means that the commercialization of agriculture in this state has not helped in reducing the instability in food grain yield. Only three states in India have very high level of commercialization (Kerala, Meghalaya and Tamil Nadu) and amidst these states Kerala has a low level of instability, whereas Meghalaya and Tamil Nadu have high level of instability. So as the theory says that the instability in food grain yield is inversely related to the degree of commercialization, it is visualized up to some extent in the cross tabulation results, the

³ In the present cross tabulation, Mizoram has been removed from the analysis because of its unusual figure of instability in food grain yield.

exception are the states that have high level of commercialization as they also have high level of instability in food grain yield for instance, Gujarat, Karnataka, Maharashtra, Sikkim, Meghalaya and Tamil Nadu.

Fig. 2.28: Scatter Diagram showing Instability in Food Grain Yield and Degree of Commercialization



2.9 (ii) Commercialization and Level of Yield

Table 2.13: Cross Tabulation between Degree of Commercialization and Level of Yield

		YIELD				Total
		1.00	2.00	3.00	4.00	
COMMERCIALIZATION	1.00	1	4	1	0	6
	2.00	2	4	2	0	8
	3.00	2	3	0	2	7
	4.00	0	2	1	0	3
Total		5	13	4	2	24

COMMERCIALIZATION 'degree of commercialization'

YIELD 'level of yield'

In table 2.13 a cross tabulation between the degree of commercialization and the level of yield is carved out. Out of the six states which show low level of commercialization (Arunachal Pradesh, Bihar, Himachal Pradesh, Manipur, Nagaland, and Orissa), five states Bihar, Himachal Pradesh, Nagaland, Orissa and Arunachal Pradesh have low to moderate level of yield. Eight states (Assam, Jammu & Kashmir, Madhya Pradesh, Mizoram, Rajasthan, Tripura, Uttar Pradesh and West Bengal) which have moderate degree of commercialization, out of them six states Assam, Jammu & Kashmir, Madhya Pradesh, Mizoram, Rajasthan and Uttar Pradesh have low to moderate level of yield. There are seven states listed in this table which have high level of commercialization (Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Punjab and Sikkim) but out of them five states (Andhra Pradesh, Gujarat, Karnataka, Maharashtra and Sikkim), whereas Punjab and Haryana have very high level of yield. The three states which exhibit very high level of commercialization are Kerala, Meghalaya and Tamil Nadu and out of them Tamil Nadu and Meghalaya have moderate level of yield, while Kerala experiences higher yields. Theoretically speaking, there exists a positive relationship between the degree of commercialization and the level of yield and the same is also seen in this cross tabulation with an exception that the states like Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Punjab and Sikkim, Meghalaya and Tamil Nadu which have high to very high level of commercialization but low to moderate level of yield.

Fig. 2.29: Scatter Diagram showing Level of Yield & Degree of Commercialization

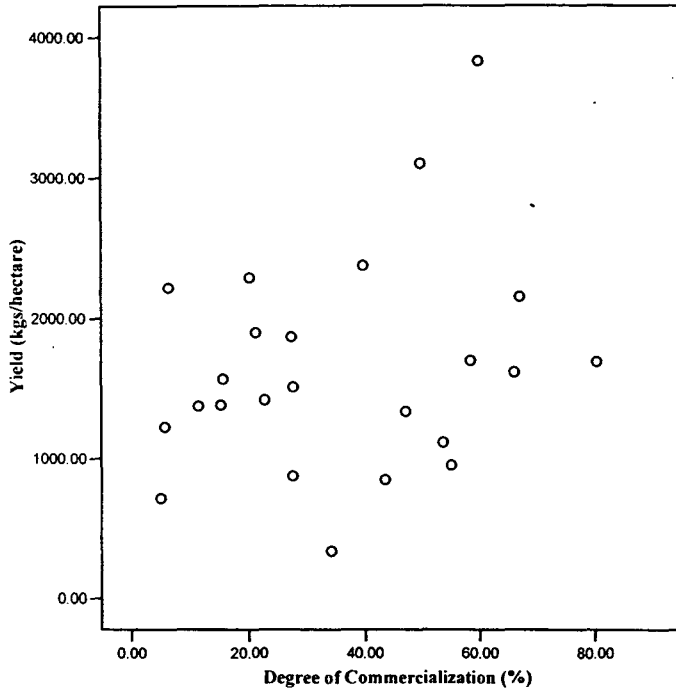
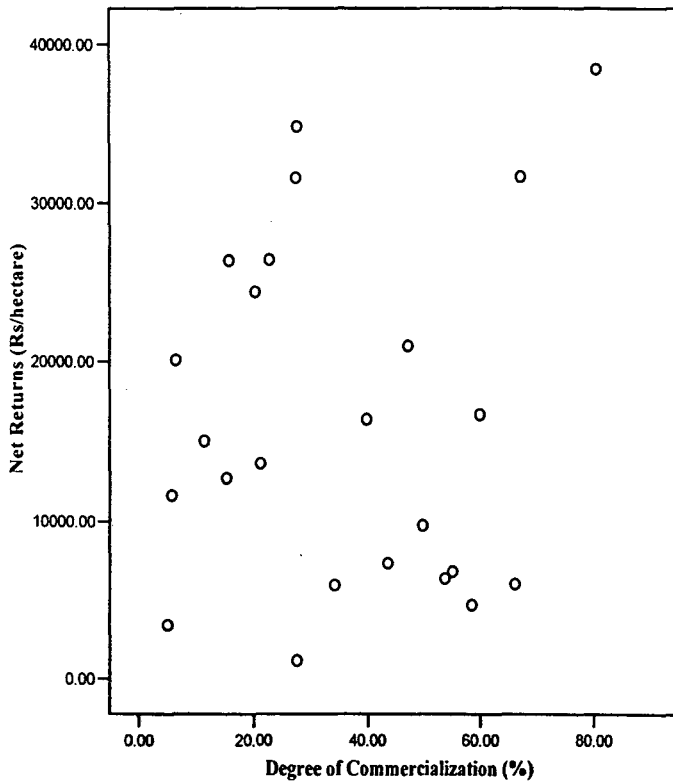


Fig. 2.30: Scatter Diagram showing Level of Net Returns & Degree of Commercialization



2.9 (iii) Commercialization and Level of Net Returns

Table 2.14: Cross Tabulation between Degree of Commercialization and Level of Net Returns

		NETRETURNS				Total
		1.00	2.00	3.00	4.00	
COMMERCIALIZATION	1.00	3	2	3	1	9
	2.00	2	2	2	2	8
	3.00	5	1	1	0	7
	4.00	1	0	0	2	3
Total		11	5	6	5	27

COMMERCIALIZATION 'degree of commercialization'
NET RETURNS 'level of net returns'

The theory says that there exists a positive relationship between the degree of commercialization and the level of net returns, but our results as displayed in the cross tabulation (table 2.14) say some different story. The table shows that out of the nine states that low level of commercialization (Arunachal Pradesh, Bihar, Chhattisgarh, Himachal Pradesh, Jharkhand, Manipur, Nagaland, Orissa and Uttaranchal), five states namely Arunachal Pradesh, Chhattisgarh, Himachal Pradesh, Jharkhand and Orissa have low to moderate level of returns. Whereas four states like Bihar, Manipur, Nagaland and Uttaranchal have high to very high level of net returns. The eight states which have moderate level of commercialization (Assam, Jammu & Kashmir, Madhya Pradesh, Mizoram, Rajasthan, Tripura, Uttar Pradesh and West Bengal), out of them two states have low (Madhya Pradesh and Rajasthan), moderate (Uttar Pradesh and West Bengal), high (Tripura and Assam) and very high (Jammu and Kashmir and Mizoram) level of net returns. There are seven states in India which have high level of commercialization (Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Punjab and Sikkim) and out of them five states (Andhra Pradesh, Gujarat, Haryana, Maharashtra and Karnataka) have low level of net returns. Punjab and Sikkim are also the states where the degree of commercialization is high and within these states, Punjab has moderate and Sikkim has high level of net returns. The three states (Kerala, Meghalaya and Tamil Nadu), which have very high degree of commercialization, out of them Kerala and Meghalaya earn very high level of net returns whereas Tamil Nadu earns low level of net returns. Therefore, the theoretical aspect of the relationship between the degree of commercialization and the level of net returns does not apply in this study.

So, in this manner it is proved (though not statistically but descriptively) that the degree of commercialization is inversely related to the instability in food grain yield and positively related with the level of yield. But the theoretical relationship between the degree of commercialization and the level of net returns does not find a sound footing in this study.

2.10 CONCLUSION

From the above analysis it can be concluded that, there are some states where the area, production and yield of food grains have gone up in the past 20 years. Within the moisture deficient states they are Jammu and Kashmir, Punjab, Haryana and Uttar Pradesh; and within the moisture surplus states they are Arunachal Pradesh, Assam, Nagaland and West Bengal. Apart from this, there are also some states where the area under food grains has shown a continuous decline but the production and yield of food grains has increased in the past 20 years. Amidst the moisture deficient states they are Andhra Pradesh, Bihar, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Orissa, Maharashtra, Rajasthan and Tamil Nadu; and amongst the moisture surplus states they are Kerala, Manipur, Meghalaya, Sikkim and Tripura.

In India, the average instability in area under food grain is very less 5.09, as compared to the average instability in food grain production and food grain yield which was 15.18 and 13.66 respectively. Factors like irrigation extent, quality of extent, rainfall etc. which were expected to have affected instability of foodgrain yield do not appear to do so, at least at the state level. It is possible that the phenomenon of yield instability is much more localized and cannot be effectively explained at the state level.

The other major reason that that has an impact on farmers' conditions is level of yield and the level of net returns; extent of irrigation, i.e. coverage of artificial water supply is the only variable that affects this significantly, and this is not surprising, given the fact that two-thirds of Indian agriculture is still rainfed and availability of water-supply is the most important constraint in Indian agriculture.

Degree of commercialization, as measured by proportion of crop sold to the total output shows a significant relationship with the cost of cultivation. This indicates that as hypothesized before, commercialization induces the farmers to move towards high-value agriculture. In other words,

though the expected returns from a commercialized agriculture may be high, it is characterised by high costs of cultivation.

There appears to exist an inverse relationship between the degree of commercialization and the level of instability in food grain yield and a positive relationship between degree of commercialization and the level of yield. In sum, regions that have high levels of yield are the ones that have a high degree of commercialization and these regions are spatially distinct from the regions that have low levels and high instability of food grain yield.

It becomes relevant to look at the state level dynamics of indebtedness, which will enable us to link up the factors we have identified that affect farmers' distress in this chapter, on the one hand, with indebtedness on the other.

CHAPTER 3
NATURE OF INDEBTEDNESS IN RURAL HOUSEHOLDS IN INDIA

3.1 INTRODUCTION

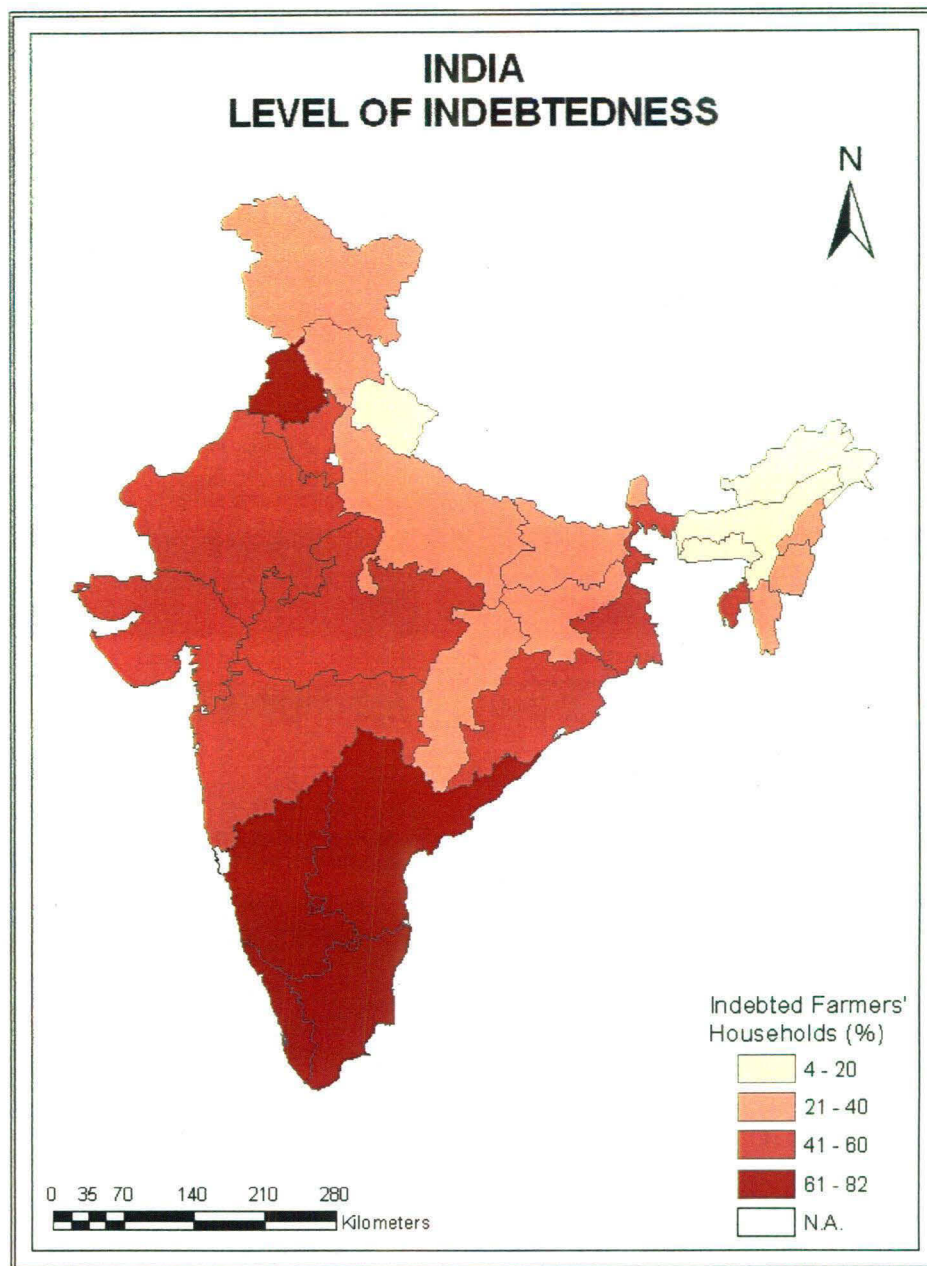
The Green Revolution ushered in 1966 in India, but its seeds fructified in the 1980s. The green revolution had its impact on the production and yield of the crops rice and wheat and India turned from a food importer country to a food exporter country. After the opening up of the economy in the 1990s, this aspect got more intense. Rice was now being produced in the non-traditional rice producing areas and this was only possible because of the introduction of new technology in the form of HYV seeds, better irrigation facilities, fertilizers, credit facilities etc. Therefore, rice and wheat which were earlier termed subsistence crops had now attained the status of commercial crops. The commercialization of agriculture was on a rapid scale and it led to an increase in the cost of cultivation.

One of the problems traditionally plaguing the Indian farmers has been that of their indebtedness. Ideally, commercialization of agriculture should increase income levels of farmers, and made them financially more independent. Literature however, points towards the fact that cost of cultivation in commercial agriculture in India is rising faster compared to the income of the farmers. The recent NSSO survey on Situation Assessment of Indian Farmers reveals that indebtedness of farming households in India continues to be a major cause for concern.

In the present chapter, the focus is on indebtedness- its nature, the purpose for which the loans were taken, the source from which the loans were taken, indebtedness across farm size, social groups and different sources of income.

According to the Situation Assessment Survey of the 59th Round of the NSSO, “a farmer household is considered to be indebted if it had any loan in cash or kind and its value at the time of transaction was Rs. 300 or more”. (Report No. 498). The figure 3.1 shows the percentage of indebted farmer households in each state.

Figure 3.1: Statewise percentage of Indebted Farmers' Households in India



At the all-India level, out of the total rural households, 60.4 percent were farmer households, and out of them 48.6 percent farmer households were indebted. The highest level of indebtedness (i.e., more than 60 percent) is witnessed in the southern Indian states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu; and in the northern Indian state of Punjab. Indebtedness is relatively lesser (varying between 40 percent to 60 percent) in the states like Haryana, Rajasthan, Gujarat, Maharashtra, Madhya Pradesh, West Bengal, Orissa and Tripura. Moderate level of indebtedness (varying between 20 percent to 40) is seen in the northern states like Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh, Bihar, Jharkhand and Chhattisgarh; and the northeastern states of Nagaland, Manipur and Mizoram. It were the hilly states of the northeast and Uttaranchal which had the lowest level of indebtedness (Fig. 3.1).

In the previous chapter, an index of agricultural development was derived and was correlated with the percentage of IFHH, then the results show a positive correlation between the two significant at 95 percent level (table 3.1). So, therefore, the states which are agriculturally developed are the ones which report relatively greater proportion of IFHH.

Table 3.1: Correlation between Level of Agricultural Development and Level of Indebtedness

		AGDEVT	IFHH
AGDEVT	Pearson Correlation	1.000	.491
	Sig. (2-tailed)	.	.015
	N	24	24
IFHH	Pearson Correlation	.491	1.000
	Sig. (2-tailed)	.015	.
	N	24	24

* Correlation is significant at the 0.05 level (2-tailed).

AGDEVT 'level of agricultural development'

IFHH 'percentage of indebted farmers' household'

3.2 INDEBTEDNESS ACROSS FARM SIZE

If we analyze the pattern of indebtedness according to farm size, then we find that out of the total indebted farmers' households (IFHH), there are 61 percent of IFHH who belong to the marginal category of farm size, 18.9 percent of IFHH farmers belong to the small farm size, 12.5 percent, 6.4 percent and 1.2 percent of IFHH belong to the category of semi-medium, medium and large farm size respectively. The IFHH have the maximum proportion in the marginal farm size category in all the states (Fig. 3.2). So, the focus is on the other farm size categories i.e., the medium and large farm size categories, because they are the well-off farmers which borrow most

so as to go for commercialization of agriculture, which further increases the prevalence of indebtedness in that state. The prevalence of indebtedness across farm size has been analyzed according to different regions for facilitation in description.

3.2 (i) Northern Region

If we analyze the pattern of indebtedness across states, then we see that among the northern Indian states of Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Uttaranchal and Uttar Pradesh; except for Punjab and Haryana, the percentage of IFHH in the marginal farmer category is more than 3/5th of the total IFHH, whereas, in rest of the farm size category it is less than the national figure. In Punjab, the proportion of IFHH in the medium and large farm size categories is 11.8 percent and 2.2 percent respectively (greater than the national figure). In Haryana, the proportion of IFHH in the medium and large farm size category is 8.8 percent and 0.9 percent respectively. (Table 3.2 (i)). Coincidentally, Punjab and Haryana are also the two Indian states which are agriculturally most developed.

Table 3.2 (i): State wise distribution of Indebted Farmers' Households across Farm Sizes in North India

STATES	Marginal	Small	Semi-Medium	Medium	Large	All	percent IFHH
Jammu & Kashmir	72.9	13.7	12.6	0.9	0	100	31.8
Himachal Pradesh	76.3	15.6	6.3	1.9	0	100	33.4
Uttaranchal	72.7	21.2	5.9	0	0	100	7.2
Uttar Pradesh	71.3	17.4	7.8	3.4	0.3	100	40.3
Punjab	53.3	15.8	17.0	11.8	2.2	100	65.4
Haryana	52.3	18.3	19.7	8.8	0.9	100	53.1
ALL INDIA	61.0	18.9	12.5	6.4	1.2	100	48.6

Source: Calculated from Statement 6, showing per 1000 distribution of indebted farmer households by size class of land possessed in different states, in Report No. 498, 59th Round, NSSO. Also see table 24 in appendix I.

The incidence of indebtedness can also be analyzed from the average amount of outstanding loan taken per farmer household in each farm size category. For facilitation in comparison with the national figure, location quotient is derived so that the proportion of the average amount in the state and the average amount in the country can be known. If the value of the location quotient (LQ) is less than 1, then the average amount of loan outstanding in the state is less than the national figure, if its 1, then the average amount of loan in the state is equivalent to national figure, if its more than 1, then the average amount of loan outstanding in the state is more than the national figure.

In this region, in the states of Punjab and Haryana, the location quotient across all the farm sizes was more than 1, indicating the average amount of loan per farmer household in each farm size category being more than the national average. (Table 3.2 (ii)). In Punjab, where the average amount outstanding per farmer household was Rs. 41576, the location quotient in the medium and the large farm size category was 3.12 and 3.51 respectively and the level of indebtedness was 65.4 percent. In Haryana, the average amount outstanding was Rs. 26007 and the location quotient in the medium and large farm size category was 1.22 and 1.23 respectively and in this state the level of indebtedness was 53.9 percent. In rest of the north Indian states, the location quotient was below 1 (except in the medium farm size category of Uttar Pradesh, where it was 1.21) and in all these states, the prevalence of indebtedness was also less, ranging from 7.2 percent in Uttaranchal to 40.2 percent in Uttar Pradesh (Table 3.2 (ii)).

Table 3.2 (ii): Location Quotient of Amount Outstanding per Farmer Household across different Farm Sizes in North India

STATES	< 0.01	0.01 - 0.4	0.41 - 1.0	1.01 - 2.0	2.01 - 4.0	4.01 - 10.0	> 10	Amount Due (Rs./FHH)	percent IFHH
Jammu & Kashmir	0.00	0.19	0.21	0.15	0.22	0.09	0.00	1903	31.8
Himachal Pradesh	0.00	1.25	0.91	0.81	0.89	0.98	0.00	9618	33.4
Uttaranchal	0.06	0.15	0.04	0.47	0.02	0.00	0.00	1108	7.2
Uttar Pradesh	0.95	0.67	0.67	0.63	0.76	1.21	0.17	7425	40.3
Punjab	1.46	1.97	1.97	2.00	4.02	3.12	3.51	41576	65.4
Haryana	1.45	1.72	2.12	2.57	2.15	1.22	1.23	26007	53.1
ALL INDIA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12585	48.6

Source: Calculated from Table 5 showing Average amount of outstanding loan per farmer household by size class of land possessed. Also see table 27 & table 28 in appendix I.

3.2 (ii) Central Region

In the central Indian states of Madhya Pradesh, Chhattisgarh, Gujarat and Rajasthan the percentage of IFHH in the marginal farmer category is less than the national figure, whereas, the percentage of IFHH in the other farm sizes are quite high than the national average in these states. Amidst these states, Rajasthan is the state where there are highest proportion of IFHH in medium (14.1 percent) and large farm size categories (4.5 percent). Even Madhya Pradesh has the second largest proportion of IFHH in the large farm size category (3.9 percent) and Gujarat has the second largest proportion of IFHH in the medium farm size category (13.2 percent) (Table 3.3 (i)).

Table 3.3(i): State wise distribution of Indebted Farmers' Households across Farm Sizes in Central India

STATES	Marginal	Small	Semi-Medium	Medium	Large	All	percent IFHH
Chhattisgarh	44.6	30.6	16.9	7.5	0.4	100	40.2
Madhya Pradesh	33.0	27.1	23.1	13.0	3.9	100	50.8
Gujarat	45.7	21.7	18.3	13.2	1.1	100	51.9
Rajasthan	43.9	19.8	17.8	14.1	4.5	100	52.4
ALL INDIA	61.0	18.9	12.5	6.4	1.2	100	48.6

Source: Same as Table 3.2 (i).

In Gujarat, the average amount outstanding per farmer household in all size classes was Rs. 15526. The location quotient of the average amount outstanding was 1.29, 1.12 and 1.11 in semi-medium, medium and large farm sizes respectively. Whereas, it was below 1 in the marginal and small farm size classes. The level of indebtedness in this state was 51.9 percent (Table 3.3 (ii)). In Rajasthan, the amount outstanding per farmer household was Rs. 18372 and the level of indebtedness was 52.4 percent. In this state the location quotient of average amount outstanding in medium and large farm size category was below 1, but it was above 1 in rest of the categories. So, it makes a point that the level of indebtedness in this state is high and correspondingly the average amount outstanding of the marginal, small and semi-medium farmers is high than the national figure, but it is low than the national figure for the medium and large farmers. In Chhattisgarh and Madhya Pradesh, the average amount outstanding was Rs. 4122 and Rs. 14218 per farmer household respectively. In these states, the level of indebtedness was 40.2 percent in Chhattisgarh and 50.8 percent in Madhya Pradesh. Among both these states, in none of the farm size classes, the location quotient of the average amount outstanding was above 1 (except in less than 0.01 farm size category of Chhattisgarh where it was 5.25) (Table 3.3 (ii)).

Table 3.3 (ii): Location Quotient of Amount Outstanding per Farmer Household across different Farm Sizes in Central India

STATES	< 0.01	0.01 - 0.4	0.41 - 1.0	1.01 - 2.0	2.01 - 4.0	4.01 - 10.0	> 10	Amount Due (Rs./FHH)	percent IFHH
Chhattisgarh	5.25	0.27	0.20	0.28	0.23	0.51	0.10	4122	40.2
Madhya Pradesh	0.83	0.51	0.85	0.91	0.82	0.70	0.81	14218	50.8
Gujarat	0.74	1.12	0.76	0.87	1.29	1.12	1.11	15526	51.9
Rajasthan	2.16	1.38	1.23	1.11	1.14	0.75	0.65	18372	52.4
ALL INDIA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12585	48.6

Source: Same as Table 3.2 (ii).

3.2 (iii) Eastern Region

Shifting to the east which consists of the states of West Bengal, Bihar, Jharkhand and Orissa, we observed that in all these states the percentage of IFHH in the marginal farm size category is more than the national average, whereas, across the other farm size classes the percentage of IFHH is less than the national average in these states (Table 3.4 (i)).

Table 3.4 (i): State wise distribution of Indebted Farmers' Households across Farm Sizes in East India

STATES	Marginal	Small	Semi-Medium	Medium	Large	All	percent IFHH
West Bengal	88.7	8.5	2.4	0.4	0	100	50.1
Bihar	86.9	9.2	2.8	0.7	0.6	100	33.0
Jharkhand	79.5	15.6	2.7	0.9	1.2	100	20.9
Orissa	70.3	20.6	7.3	1.7	0	100	47.8
ALL INDIA	61.0	18.9	12.5	6.4	1.2	100	48.6

Source: Same as Table 3.2 (i).

In this region, the average amount of outstanding loan ranged between Rs. 2000 to Rs. 6000. In Bihar, it was Rs. 4476, Jharkhand Rs. 2205, Orissa Rs. 5871 and West Bengal Rs. 5237 (Table 3.4 (ii)). The average amount of outstanding loan in all farm sizes was below the national average which is reflected in the value of the location quotient, which was below 1 across all farm sizes in these four states. But still the level of indebtedness in West Bengal was 50.1 percent (above the national level figure of 48.6 percent). Whereas, in Bihar, Jharkhand and Orissa, it was 33 percent, 20.9 percent and 47.8 percent respectively (all of them below the national figure) (Table 3.4 (ii)).

Table 3.4 (ii): Location Quotient of Amount Outstanding per Farmer Household across different Farm Sizes in Central India

STATES	< 0.01	0.01 - 0.4	0.41 - 1.0	1.01 - 2.0	2.01 - 4.0	4.01 - 10.0	> 10	Amount Due (Rs./FHH)	percent IFHH
West Bengal	0.29	0.62	0.62	0.70	0.53	0.32	0.00	5237	50.1
Bihar	0.57	0.57	0.47	0.45	0.32	0.07	0.91	4476	33.0
Jharkhand	0.18	0.34	0.22	0.14	0.11	0.16	0.36	2205	20.9
Orissa	0.35	0.60	0.69	0.50	0.41	0.28	1.51	5871	47.8
ALL INDIA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12585	48.6

Source: Same as Table 3.2 (ii).

3.2 (iv) Southern Region

In the southern Indian states, which comprises Andhra Pradesh, Maharashtra, Kerala, Karnataka and Tamil Nadu, among these states, Tamil Nadu and Kerala are the ones where the percentage of IFHH in the marginal farm size category is higher than the national average and the proportion of IFHH in the rest of the categories are less than the national figure (Table 3.5 (i)). In other states, i.e., Andhra Pradesh, Maharashtra and Karnataka, the proportion of IFHH in the marginal farm size category is less than the national average, whereas, the proportion of IFHH in the semi-

medium, medium and large farm size is more than the national figure in these states (Table 3.5 (i)).

Table 3.5 (i): State wise distribution of Indebted Farmers' Households across Farm Sizes in South India

STATES	Marginal	Small	Semi-Medium	Medium	Large	All	percent IFHH
Andhra Pradesh	55.7	21.8	15.1	6.6	0.7	100	82.0
Karnataka	50.7	22.8	15.9	9.3	1.2	100	61.6
Maharashtra	36.0	26.2	23.3	12.2	2.4	100	54.8
Tamil Nadu	72.6	15.4	9.3	2.2	0.4	100	74.5
Kerala	87.7	9.1	2.6	0.5	0.1	100	64.4
ALL INDIA	61.0	18.9	12.5	6.4	1.2	100	48.6

Source: Same as Table 3.2 (i).

In Tamil Nadu, the average amount outstanding per farmer household was Rs. 23963. The location quotient of the average amount outstanding was more than 1 in almost all categories, it was 2.05 in medium farm size category and 1.19 in large farm size category, correspondingly, the level of indebtedness was 74.5 percent (second largest in India) (Table 3.5 (ii)). In Kerala, the average amount outstanding per farmer household was Rs. 33907. The location quotient of the amount outstanding was below 1 in large farm size category and one of the marginal farm size category (< 0.01 farm size class, where it was 0.34), but in rest of the categories it was even more than 3.5. Correspondingly, the level of indebtedness in Kerala was also high at 64.4 percent (Table 3.5 (ii)).

In Andhra Pradesh and Karnataka, the average amount of loan outstanding was Rs. 23965 and Rs. 18135 respectively. The location quotient of the average amount of loan outstanding across all farm sizes in Andhra Pradesh as well as in Karnataka was more than 1. In Andhra Pradesh, it was 1.05 and 1.36 in medium and large farm size classes respectively, whereas, it was 1.05 and 1.06 in these farm size classes in Karnataka. Corresponding to this the level of indebtedness was 82 percent in Andhra Pradesh (highest in the country) and 61.6 percent in Karnataka (Table 3.5 (ii)).

In Maharashtra, the average amount of loan outstanding was Rs. 16973. The location quotient of the amount was below 1 in semi-medium and medium farm size classes, whereas it was above 1 in rest of the farm size classes with a high of 1.65 in large farm size category. The level of indebtedness was 54.8 percent (Table 3.5 (ii)).

Table 3.5 (ii): Location Quotient of Amount Outstanding per Farmer Household across different Farm Sizes in South India

STATES	< 0.01	0.01 - 0.4	0.41 - 1.0	1.01 - 2.0	2.01 - 4.0	4.01 - 10.0	> 10	Amount Due (Rs./FHH)	percent IFHH
Andhra Pradesh	2.02	1.86	2.11	2.40	1.28	1.05	1.36	23965	82.0
Karnataka	1.32	1.22	1.54	1.06	1.12	1.05	1.06	18135	61.6
Maharashtra	1.37	1.05	1.03	1.15	0.81	0.94	1.65	16973	54.8
Tamil Nadu	0.99	2.11	2.56	2.29	1.72	2.05	1.19	23963	74.5
Kerala	0.34	3.81	4.92	4.44	3.67	3.69	0.33	33907	64.4
ALL INDIA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12585	48.6

Source: Same as Table 3.2 (ii).

3.2 (v) North Eastern Region

The states of northeast India are completely different from the rest of the Indian states. Only Tripura is the state where the percentage of IFHH (49.2percent) is higher than the national figure. Amidst these states, in Arunachal Pradesh, the proportion of IFHH in the marginal farm size category is the least (27.8 percent) (Table 3.6 (i)). In rest of the northeastern states, its just on the contrary, all of them have greater proportion of IFHH in the marginal farm size category than in the small, semi-medium, medium and large farm size classes (Table 3.6 (i)).

Table 3.6 (i): State wise distribution of Indebted Farmers' Households across Farm Sizes in North East India

STATES	Marginal	Small	Semi-Medium	Medium	Large	All	percent IFHH
Assam	70.6	20.8	8.1	0.5	0	100	18.1
Arunachal Pradesh	27.8	44.4	27.8	0	0	100	5.9
Manipur	80.1	18.6	1.1	0.2	0	100	24.8
Meghalaya	74.5	15.7	11.8	0	0	100	4.1
Mizoram	58.2	31.0	10.9	0	0	100	23.6
Nagaland	64.5	33.7	1.7	0	0	100	36.5
Sikkim	82.2	14.9	2.9	0	0	100	38.8
Tripura	94.7	5.3	0	0	0	100	49.2
ALL INDIA	61.0	18.9	12.5	6.4	1.2	100	48.6

Source: Same as Table 3.2 (i).

In the northeastern states the average amount of outstanding loan was Rs. 813 in Assam, Rs. 2269 in Manipur, Rs. 72 in Meghalaya, Rs. 1876 in Mizoram, Rs. 1030 in Nagaland, Rs.2053 in Sikkim and Rs. 2977 in Tripura (Table 3.6 (ii)). The location quotient of average amount of loan outstanding across all farm size classes in all the states was below 1, and correspondingly, the

level of indebtedness in all the northeastern states was also quite less as compare to the national figure of 48.6 percent (except Tripura, where it was 49.2 percent) (Table 3.6 (ii)).

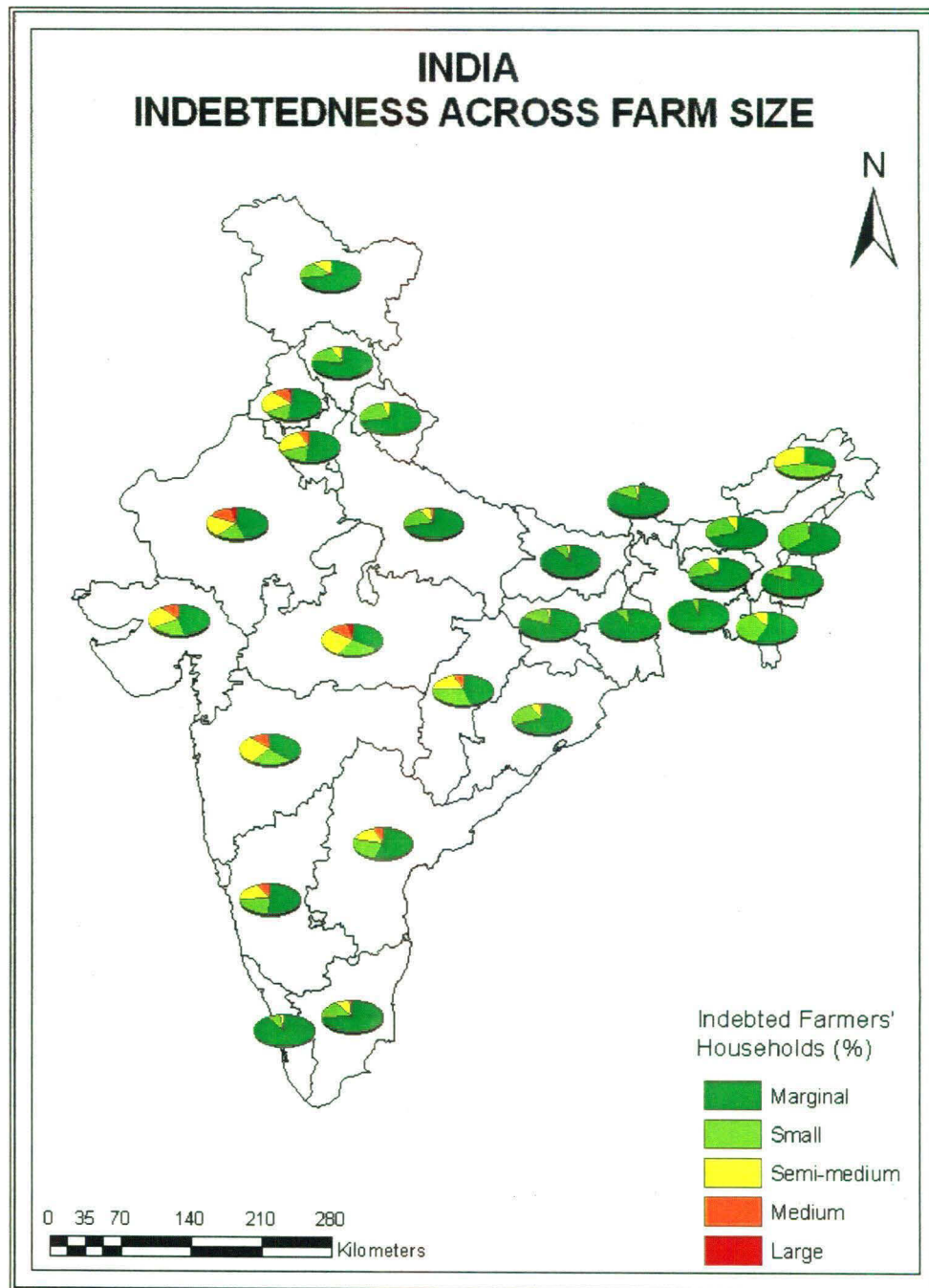
Table 3.6 (ii): Location Quotient of Amount Outstanding per Farmer Household across different Farm Sizes in South India

STATES	< 0.01	0.01 - 0.4	0.41 - 1.0	1.01 - 2.0	2.01 - 4.0	4.01 - 10.0	> 10	Amount Due (Rs./FHH)	percent IFHH
Assam	0.06	0.13	0.07	0.07	0.05	0.11	0.00	813	18.1
Arunachal Pradesh	0.01	0.00	0.02	0.08	0.03	0.00	0.00	493	5.9
Manipur	0.03	0.39	0.26	0.11	0.35	0.00	0.00	2269	24.8
Meghalaya	0.00	0.00	0.01	0.00	0.00	0.00	0.00	72	4.1
Mizoram	0.07	0.03	0.29	0.14	0.02	0.00	0.00	1876	23.6
Nagaland	0.06	0.03	0.11	0.09	0.13	0.00	0.00	1030	36.5
Sikkim	0.18	0.47	0.15	0.13	0.23	0.00	0.00	2053	38.8
Tripura	0.27	0.32	0.42	0.23	0.00	0.00	0.00	2977	49.2
ALL INDIA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12585	48.6

Source: Same as Table 3.2 (ii).

It has been found on close scrutiny that the wherever the proportion of IFHH in the medium farm size class is more over there the prevalence of indebtedness is also more. And also, it has been observed that in most of the states that wherever the average amount of outstanding loan per farmer household in the medium farm size class is more than the national figure, in those states, the level of indebtedness is also high.

Fig. 3.2: Statewise Indebtedness across Farm Size



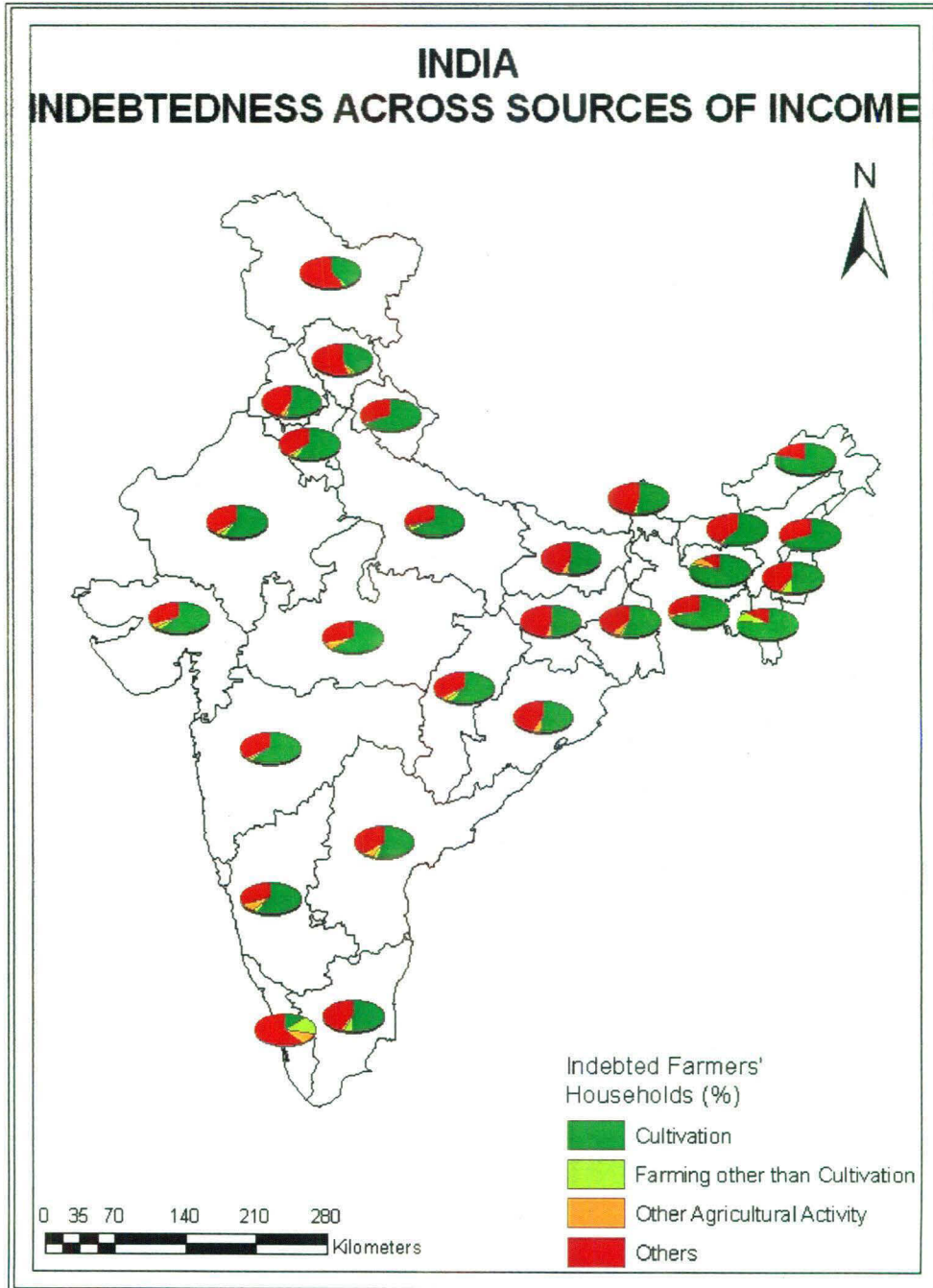
3.3 INDEBTEDNESS ACROSS SOURCES OF INCOME

At the All India level, the proportion of IFHH having cultivation as their source of income was 56.9 percent. Approximately, 3.2 percent of the IFHH derived their income from 'farming other cultivation' which includes animal husbandry, poultry, fishery, bee-keeping etc. Whereas, 4.1 percent of the IFHH live upon 'other agricultural activity' that inculcates, growing of trees, horticultural crops (orchards) and plantations (rubber, cashew, pepper, coffee, tea etc) and the rest 35.7 percent of IFHH fall in the category of other sources of income (*see appendices*).

Geographically stating, amidst the states of northern India (except Jammu & Kashmir and Himachal Pradesh), the other states like Punjab, Haryana, Uttaranchal and Uttar Pradesh have maximum proportion of IFHH who earn their livelihood through cultivation. Whereas, in Jammu & Kashmir and Himachal Pradesh, more than 50 percent of the IFHH have 'other' sources of income. The states of eastern India which comprises Bihar, Jharkhand, West Bengal and Orissa have more than half of the IFHH who have cultivation as their major source of income. The similar trend is also followed in central, northeastern and southern region (except Kerala where the maximum proportion of IFHH derive their income from 'other' income sources) also show similar kind of pattern.

So, in brief it can be said that the incidence of indebtedness is maximum amidst the farmers who derive their income from cultivation followed by 'other' source of income.

Fig. 3.3: Statewise Indebtedness across Sources of Income



3.4 INDEBTEDNESS ACROSS SOCIAL GROUPS

Looking at the status of indebtedness as per social groups, we find that, at the All India level, the OBC farmers are the most indebted (43.9 percent) amidst all the social groups, followed by other category of farmers who comprise 28 percent of the total IFHH. The proportion of SC and ST IFHH are 18 percent and 10 percent respectively.

In the northern Indian states, all the states (except Uttar Pradesh) have highest proportion of IFHH in the other social group category (ranging from 44.6 percent in Uttaranchal to 76.5 percent in Jammu & Kashmir) as compared to various other social groups. In Uttar Pradesh the proportion of IFHH of the OBC category is the highest (55.7 percent). Except in Haryana, in rest of the northern Indian states, the SC farmers are the second most indebted. Whereas, in Haryana, the OBC farmers constitute the second largest proportion of the indebted farmers (32.6 percent) (Fig. 3.4).

Amongst the states of the eastern region, except West Bengal, rest of the states have highest proportion of IFHH (more than 50 percent) in the OBC category. In West Bengal, the greatest proportion of IFHH is in the other social group category (57.3 percent) (Fig. 3.4).

In the central Indian region, all the states have the maximum proportion of IFHH in the OBC category (ranging from 32.6 percent in Gujarat to 49.2 percent in Chhattisgarh). In Chhattisgarh and Rajasthan, the second largest proportion of IFHH is the ST farmer household, whereas, in Gujarat and Madhya Pradesh, they are the farmers of SC and other social group category.

Amidst the southern Indian states, except Maharashtra, rest of the states has maximum proportion of IFHH in the OBC category. In Karnataka, Kerala and Andhra Pradesh, the second largest proportion of IFHH are the farmers of the other social group. Whereas, in Tamil Nadu, the SC farmer households are the second most indebted. In Maharashtra, the social group others has the largest proportion of IFHH (47.7 percent) followed by the OBC social group (34.5 percent).

In the northeastern states of Meghalaya, Mizoram, Nagaland and Tripura, the highest proportion of IFHH are of the ST social group. Whereas, in Arunachal Pradesh and Assam, the IFHH of the other social group constitute the largest share. Alone in Manipur, the maximum proportion of IFHH is in the OBC social group (57.4 percent) (Fig. 3.4).

3.5 PURPOSE OF LOAN

At the All India level, if we look at the different purposes for which the loan was taken, then we find that out of Rs. 1000, Rs. 306 were taken for capital expenditure in farm business and Rs. 278 for current expenditure in farm business. The next share was covered by marriages and ceremonies for which Rs. 111 were taken. Non-farm business, consumption expenditure, education, medical treatment, and other expenses were some other purposes for which the loan was taken and their amount across states and at the All India level are given in the appendix. Across the states, the states of Bihar, West Bengal, Jharkhand and Orissa in the east; Andhra Pradesh, Karnataka, Tamil Nadu in the south; Jammu & Kashmir, Uttar Pradesh, Punjab, Haryana in the north; and Rajasthan, Gujarat, Madhya Pradesh, Maharashtra and Chhattisgarh in the central India are the ones where farmers borrow mainly for the capital as well as current expenditure in farm business. These are the states which have been traditional zones practicing cultivation since long. Apart from this, in the northeast, Meghalaya and Mizoram are the ones in which farmers borrow mainly for farm business (Fig. 3.5).

Other than the purpose of farm business, loans in order of prominence were taken for other expenditure category, non-farm business and consumption expenditure in the states of Assam, Himachal Pradesh, Kerala, Nagaland, Sikkim, Tripura and Uttaranchal (Fig. 3.5).

Arunachal Pradesh and Manipur of the northeastern region are the states where apart from other expenditure; loans were also taken for education and medical treatment (Fig. 3.5). Except farm business, the loans taken for rest of the purposes have a north-south divide. For instance, it were mainly the states of northern India like Bihar, Gujarat, Haryana, Madhya Pradesh, Rajasthan and Uttar Pradesh for which loans were taken prominently for the purpose of marriages and ceremonies. Punjab is an exception in this case as in this state, apart from farm business, loans were mainly taken for fulfilling the demands of other expenditure (Fig. 3.5).

In the states of south India, other than farm businesses, loans were also taken for consumption expenditure, other expenditure and for non-farm business, but not for marriages and ceremonies. Orissa is an exception in this case as in this state the second prominent purpose for which the borrowings were made was the marriages and ceremonies (Fig. 3.5).

The two northeastern states of Meghalaya and Mizoram in which loans were taken mainly for farm businesses; in these states too the second important purpose was consumption expenditure (Fig. 3.5).

Therefore, we can say that, in all the states farmers borrow for the purpose of farm business, but apart from that in the southern Indian states, they borrow for consumption expenditure, other expenditure and non-farm business. On the other hand, in the northern Indian states, the farmers borrow for marriages and ceremonies apart from farm business.

A correlation was run between the level of indebtedness and the amount of loan taken for different purposes, and the result show a positive correlation between the level of indebtedness and loan taken for the purpose of current expenditure in farm business (correlation coefficient being 0.445, significant at 95 percent level of confidence). The results are displayed in Table 3.7. Therefore, it means that the states where the farmers have borrowed the most for the purpose of current expenditure in farm business are the ones which are more relatively more indebted than the others.

Table 3.7: Correlation between Level of Indebtedness and Amount Borrowed for different Purposes

		IFHH	CAPEXPFB	CUREXPFB	NFB	CE	M n C	EDN	MED	OTHERS
IFHH	Pearson Correlation	1.000	.069	.445*	-.170	-.295	.335	-.333	-.203	-.336
	Sig. (2-tailed)	.	.726	.018	.389	.127	.082	.083	.300	.080
	N	28	28	28	28	28	28	28	28	28

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

IFHH "level of indebtedness"

CAPEXPFB "capital expenditure in farm business"

CUREXPFB "current expenditure in farm business"

NFB "non-farm business"

CE "consumption expenditure"

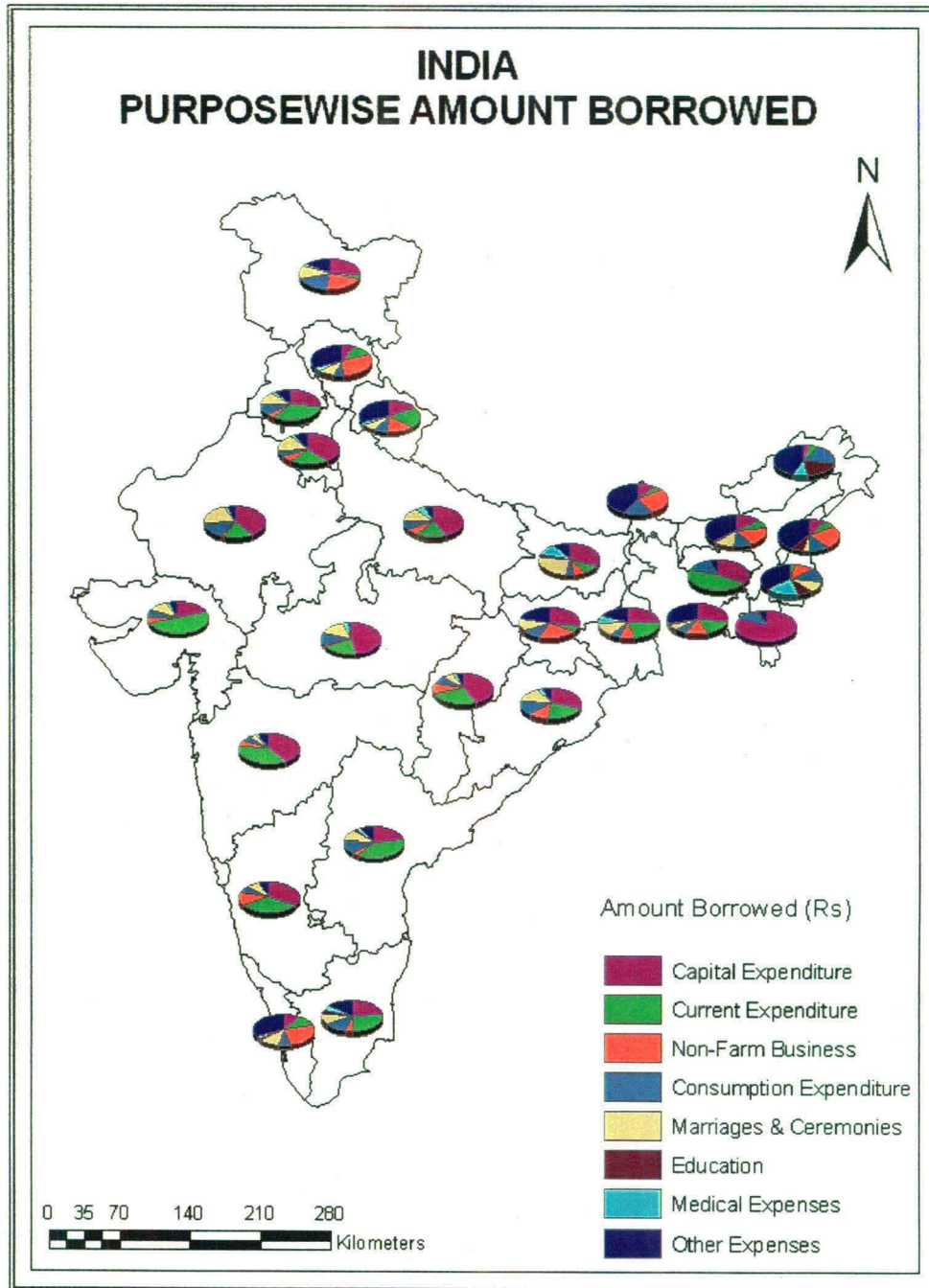
M n C "marriages & ceremonies"

EDN "education"

MED "medical expenditure"

OTHERS "other expenditure"

Fig. 3.5: Statewise Amount Borrowed for different Purposes



3.5 (i) Farm size wise Distribution of Loan Borrowed for different Purposes

If we analyze the loan taken for different purposes across farm sizes, then we find that at the All India level, across all farm size classes, maximum amount of loan was taken for capital and current expenditure in farm business, i.e., Rs. 306 and Rs. 278 per thousand respectively. The next major purpose was the marriages and social ceremonies for which Rs. 111 were borrowed; it was closely followed by other purposes for which Rs. 108 were borrowed. Consumption expenditure and non-farm business were the other purposes for which Rs. 88 and Rs. 67 were taken as loans. Medical expenses and educational expenses ranked the lowest as only Rs. 33 and Rs. 8 respectively were taken as loans for these purposes. The amount taken as loan for capital and current expenditure in farm business has been increasing as per an increase in farm size. Whereas, the amount borrowed for various other purposes has declined as per an increase in farm size (Table 3.8).

Table 3.8: Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for various Purposes in India

Farm Size	CAPEXP	CURREXP	NFB	CONEXP	M n C	EDN	MED	OTHERS	ALL
Marginal	186	159	112	127	168	11	58	178	1000
Small	326	320	46	87	99	5	24	93	1000
Semi-Medium	388	347	47	50	89	7	13	59	1000
Medium	411	398	23	59	50	5	12	41	1000
Large	457	325	32	48	29	15	37	57	1000
All Sizes	306	278	67	88	111	8	33	108	1000
CV	67	86	209	183	383	53	89	189	

Source: Calculated from Table 2 showing per thousand distribution of outstanding loans (in Rs.) by purpose of loan for each size class of land possessed by farmer household. Also see table 29 in appendix I.

CAPEXPFB "capital expenditure in farm business"

CURREXPFB "current expenditure in farm business"

NFB "non-farm business"

CE "consumption expenditure"

M n C "marriages & ceremonies"

EDN "education"

MED "medical expenditure"

OTHERS "other expenditure"

The loans taken for various purposes by farmers of different farm size classes, has a great deal of spatial variation, so for the facilitation in analysis, a comparison of north and south India (only major states have been taken) has been made. The coefficient of variation (CV) of each purpose across farm size has been carved out, and on the basis of the CV the analysis is carried on. The

loan taken for capital and current expenditure in farm business has the lowest percentage of variation (CV) across farm size. It was 30 percent for capital expenditure and 29 percent for current expenditure. The loan taken for rest of the purposes have relatively greater variation, across farm sizes, for instance, loan taken for non-farm business has 67 percent variation. Amount borrowed for consumption expenditure, marriages and ceremonies, education, medical purposes and other purposes has 45 percent, 62 percent, 51 percent, 67 percent and 64 percent variation respectively across farm sizes. It means that, the amount borrowed for capital and current expenditure in farm business has been relatively equal throughout the farm sizes than the amount borrowed for rest of the purposes. For meeting out the expenditures of the farm businesses, it was, generally the medium and large size farmers who borrowed. Whereas, for fulfilling the demand of rest of the purposes, it were the marginal farmers who had borrowed relatively more than the farmers in rest of the farm size classes (except for the purpose of education where the large farmers had taken maximum loan amidst farmers possessing different farm sizes (Table 3.8).

3.5 (i) (a) Loans taken for Capital Expenditure in Farm Business

The loans taken for capital expenditure in farm business had a relatively low variation across farm sizes in the states of north India than in the states of south India. In the south Indian states, the variation was lowest in Maharashtra (21 percent), and highest in Kerala (110 percent). In Kerala, the variation was high as it were the large farmers who had borrowed Rs. 760/1000, whereas, the small and semi-medium farmers had borrowed Rs. 260 & Rs. 207 for the purpose of capital expenditure in farm business. Karnataka and Orissa also had a high variation of 53 percent and 62 percent respectively. Whereas, Tamil Nadu and Andhra Pradesh had a variation of 35 percent and 24 percent respectively (Table 3.9 (i)).

Table 3.9 (i): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Capital Expenditure in Farm Business in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	150	172	74	284	149	249
Small	290	247	260	324	308	342
Semi-Medium	259	365	207	419	352	300
Medium	312	413	27	443	440	642
Large	269	689	760	474	277	1000
CV (percent)	86	53	110	21	35	62

Source: Same as Table 3.8.

In the north Indian states, it was lowest in Rajasthan with 20 percent variation and was highest in Bihar (51 percent). In Bihar, the high variation was because of the fact that the large and the semi-medium farmers had borrowed the most in comparison to the farmers of other farm size classes. Punjab, Uttar Pradesh and West Bengal had a variation ranging in the thirties (Table 3.9 (ii)).

Table 3.9 (ii): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Capital Expenditure in Farm Business in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	223	89	149	330	170	265	270	185
Small	403	328	351	470	120	348	350	423
Semi-Medium	557	281	591	399	289	432	606	274
Medium	194	142	352	572	334	452	627	333
Large	679	331	565	650	275	382	729	
CV (percent)	51	48	45	27	38	20	38	33

Source: Same as Table 3.8.

3.5 (i) (b) Loans taken for Current Expenditure in Farm Business

The variation in the loans taken for current expenditure in farm business was quite similar in north as well as in south India. In south India, it was lowest in Maharashtra with 21 percent and highest in Kerala with 83 percent followed by Orissa which had 71 percent variation. This much high variation in Kerala and Orissa is attributed to the fact that in both these states, it were the semi-medium and medium farmers who had borrowed the most. Tamil Nadu and Karnataka,

both had a variation of 31 percent, whereas in Andhra Pradesh this variation was 34 percent (Table 10 (i)).

Table 3.10 (i): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Current Expenditure in Farm Business in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	233	227	61	255	181	202
Small	375	499	136	354	277	241
Semi-Medium	482	459	251	445	376	485
Medium	496	446	381	448	302	326
Large	642	290	35	371	186	0
CV (percent)	34	31	83	21	31	71

Source: Same as Table 3.8.

Amidst the northern Indian states, the least variation of the loans taken for current expenditure in farm business was witnessed in West Bengal (14 percent) and the highest variation was in Bihar (79 percent). In Bihar, it was so high because, it were the small farmers who had borrowed the maximum amount in comparison to the farmers of other farm size classes. In rest of the states, the variation ranged between 25 percent to 50 percent (Table 3.10 (ii)).

Table 3.10 (ii): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Current Expenditure in Farm Business in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	58	256	151	122	83	124	126	190
Small	191	484	260	182	496	210	383	254
Semi-Medium	67	475	239	243	491	181	164	259
Medium	37	728	420	272	386	259	287	265
Large	47	575	421	235	304	245	265	
CV (percent)	79	34	40	28	48	27	42	14

Source: Same as Table 3.8

3.5 (i) (c) Loans taken for Non-Farm Business

Loans taken for the non-farm businesses have a huge variation across farm sizes in all the states of north India as well as of south India. In the southern Indian states, the variation was highest in Tamil Nadu (161 percent), and lowest in Maharashtra (63 percent). This sort of high variation in

Tamil Nadu was because the large farmers had taken Rs. 429/1000, whereas, the other farmers had taken below Rs. 100. In Orissa and Karnataka, the variation was 123 percent and 134 percent respectively, but in both these states, it were the marginal and small farmers who had borrowed more than the semi-medium, medium and large farmers (Table 3.11 (i)).

Table 3.11 (i): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Non-Farm Business in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	53	207	197	62	88	153
Small	12	55	252	54	13	55
Semi-Medium	9	54	301	17	17	46
Medium	39	0	575	29	12	0
Large	0	1	0	104	429	0
CV (percent)	99	134	78	63	161	123

Source: Same as Table 3.8.

In the northern Indian states, the variation in loans taken across farm size was quite high in all the states. It was highest in Haryana with 151 percent and lowest in West Bengal with 70 percent. More than 100 percent variation was also seen Uttar Pradesh (116 percent), Madhya Pradesh (119 percent), Gujarat (133 percent) and Bihar (111 percent).

In all these states which had more than 100 percent variation, the marginal, small and semi-medium farmers were the ones who had borrowed more than the medium and large farmers (Table 3.11 (ii)).

Table 3.11 (ii): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Non-Farm Business in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	85	38	136	44	89	45	98	116
Small	29	16	64	11	101	24	23	88
Semi-Medium	47	100	0	9	49	19	105	129
Medium	0	2	0	8	7	13	0	0
Large	0	0	0	0	0	0	0	0
CV (percent)	111	133	151	119	94	81	116	70

Source: Same as Table 3.8.

3.5 (i) (d) Loans taken for Consumption Expenditure

The variation in loans taken for consumption expenditure was relatively high in most of the north Indian states than in the south Indian states. In southern Indian states, it was highest in Kerala (105 percent) and lowest in Andhra Pradesh (50 percent). Maharashtra, Tamil Nadu and Orissa also had high variation of 95 percent, 87 percent and 97 percent. In all these states with high variation, it were the marginal and small farmers who had taken more loans than the semi-medium, medium and large farmers (Table 3.12 (i)).

Table 3.12 (i): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Consumption Expenditure in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	162	104	130	97	191	113
Small	108	54	42	39	88	171
Semi-Medium	100	35	44	34	70	42
Medium	54	30	0	17	53	32
Large	45	21	21	3	0	0
CV (percent)	50	68	105	95	87	97

Source: Same as Table 3.8.

In the north Indian states, this variation was highest in Bihar 169 percent, followed by Haryana, Gujarat, and West Bengal where the variation was above 100 percent. Lowest variation was witnessed in Rajasthan (19 percent). In Uttar Pradesh, Punjab and Haryana it was 84 percent, 74 percent and 73 percent respectively. In Haryana, Madhya Pradesh, Punjab, Uttar Pradesh and West Bengal, it were again the marginal and small farmers who had borrowed more than the farmers of other size classes. In Bihar, the medium-sized farmers had borrowed the most (Rs. 407/1000) followed by the marginal farmers (Rs. 90/1000). In Gujarat, the marginal and medium-sized farmers had borrowed the most (Rs. 106/1000) than the farmers of other category (Table 3.12 (ii)).

Table 3.12 (ii): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Consumption Expenditure in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	90	106	99	167	185	156	104	83
Small	9	36	66	172	120	168	52	35
Semi-Medium	9	4	10	59	16	110	18	160
Medium	407	106	10	37	96	116	47	0
Large	0	0	2	37	39	154	6	
CV (percent)	169	104	115	73	74	19	84	100

Source: Same as Table 3.8.

3.5 (i) (e) Loans taken for Marriages and Ceremonies

The variation in the amount borrowed for the purpose of marriages and ceremonies was high in all the states. In south India, this variation was highest in Kerala (123 percent), followed by Orissa (120 percent) and Karnataka (100 percent). In rest of the southern Indian states, the variation was below 100 percent. In all these states, it were the marginal and small farmers and up to some extent semi-medium farmers who had borrowed the most than the medium and large farmers (Table 3.13 (i)).

Table 3.13 (i): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Marriages and Ceremonies in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	164	138	122	99	105	171
Small	90	71	134	64	120	99
Semi-Medium	50	52	18	22	59	36
Medium	46	12	0	35	13	0
Large	23	0	0	2	0	0
CV (percent)	74	100	123	85	90	120

Source: Same as Table 3.8.

In the north Indian states, this variation was highest in Gujarat (173 percent) and lowest in Rajasthan (58 percent). In Uttar Pradesh and West Bengal also, the variation was high at 102 percent and 104 percent respectively. Only in Gujarat and Uttar Pradesh it were the marginal farmers who had borrowed the most for the purpose of marriages and ceremonies. Whereas, in West Bengal, the semi-medium farmers were the predominant borrowers for this purpose as they borrowed Rs. 402/1000. They were followed by the marginal farmers who borrowed Rs.

128/1000. In Bihar, where the variation was 70 percent, similar pattern was followed. In Punjab, Haryana, Rajasthan and Madhya Pradesh, where the variation was 65 percent, 74 percent, 58 percent and 76 percent respectively, in these states, the marginal and small farmers had borrowed the most. In these states, the medium farmers were also the ones who were the next biggest borrowers for the purpose of marriages and social ceremonies (Table 3.13 (ii)).

Table 3.13 (ii): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Marriages and Ceremonies in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	291	334	207	217	203	301	186	128
Small	119	11	207	119	76	161	89	54
Semi-Medium	190	49	45	242	63	207	63	52
Medium	362	17	150	44	109	70	20	402
Large	14	0	11	26	40	80	0	
CV (percent)	70	173	74	76	65	58	102	104

Source: Same as Table 3.8.

3.5 (i) (f) Loans taken for Education

For the purpose of education, there's a high variation across farm sizes in all the states. Amidst the south Indian states this variation was highest in Orissa at 197 percent, followed by Maharashtra 152 percent, Kerala 120 percent and Tamil Nadu 110 percent. Lowest variation was in Karnataka 80 percent. In Kerala and Orissa, marginal and small farmers; in Andhra Pradesh, the semi-medium farmers; in Tamil Nadu, the medium farmers and in Maharashtra, the large farmers borrowed the most for the purpose of education (Table 3.14 (i)).

Table 3.14 (i): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Education in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	14	6	14	1	33	1
Small	4	5	4	10	10	6
Semi-Medium	28	11	6	1	7	0
Medium	15	3	0	4	58	0
Large	0	0	0	44	0	0
CV (percent)	90	80	120	152	110	197

Source: Same as Table 3.8.

In north India, this variation across farm size in none of the state was below 100 percent. It was highest in Punjab (207 percent) and lowest in Uttar Pradesh (105 percent). In Haryana, none of the farmers took loan for the purpose of education. Whereas, in Bihar, it were the large farmers who had taken maximum amount of loan for fulfilling the education requirement of their children. In Gujarat, Punjab, Madhya Pradesh and West Bengal, it were the marginal and small farmers, whereas, in Uttar Pradesh and Rajasthan it were the semi-medium farmers who had taken maximum amount of loan for the purpose of education (Table 3.14 (ii)).

Table 3.14 (ii): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Education in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	17	15	0	3	1	11	2	5
Small	0	7	0	0	3	6	2	8
Semi-Medium	0	0	0	0	0	19	4	0
Medium	0	0	0	1	0	0	0	0
Large	260	0	0	0	0	0	0	
CV (percent)	207	152	0	160	169	112	105	120

Source: Same as Table 3.8.

3.5 (i) (g) Loans taken for Medical Expenses

The loans that the farmers borrowed for clearing out the medical expenses were quite varying across farm sizes. In the southern Indian states, this variation was more than 100 percent in all the states (except Andhra Pradesh, where it was 81 percent). The highest variation was seen in Karnataka (176 percent). In all the southern Indian states, it were the marginal and small farmers than the other farmers who were needier to take loan to meet their medical expenses (Table 3.15 (i)).

Table 3.15 (i): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Medical Expenses in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	49	4	33	48	58	42
Small	15	0	6	8	42	5
Semi-Medium	16	0	8	8	15	9
Medium	6	1	0	6	0	0
Large	16	0	0	0	0	0
CV (percent)	81	176	145	138	113	158

Source: Same as Table 3.8.

In the northern Indian states too, except for Madhya Pradesh (where the variation in loan taken was 61 percent), all the other states had variation above 100 percent, with highest variation in Haryana (163 percent). In Rajasthan, where the variation was 106 percent, over there, the large farmers had taken maximum amount of loan (Rs. 137/1000). In Punjab and Haryana, along with the marginal farmers the semi-medium and medium sized farmers required money more than the other size classes of farmers to carry out the medical expenses. In rest of the north Indian states, the marginal and small sized farmers were more inclined to take loans for medical purposes (Table 3.15 (ii)).

Table 3.15 (ii): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Medical Expenses in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	132	61	56	75	73	24	103	71
Small	59	87	1	25	0	26	60	12
Semi-Medium	24	9	17	31	12	10	5	7
Medium	0	4	0	15	29	44	1	0
Large	0	0	0	50	0	137	0	
CV (percent)	129	122	163	61	134	106	136	146

Source: Same as Table 3.8.

3.5 (i) (h) Loans taken for Other Purposes

The amount borrowed for the purpose of other expenditure had relatively more variation in north India, than in south India. In south India, it was highest in Maharashtra with 94 percent, followed by 92 percent in Orissa and 91 percent in Andhra Pradesh. Tamil Nadu had the lowest variation (28 percent). In Orissa, Tamil Nadu, Maharashtra and Andhra Pradesh, it were the marginal and small farmers who had taken most of the loans than the farmers of other farm size classes. Whereas, in Karnataka and Kerala, it were the marginal farmers followed by the large farmers who were the prominent borrowers to fulfill other purposes (Table 3.16 (i)).

Table 3.16 (i): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Other Purposes in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	175	141	369	154	196	68
Small	106	70	165	146	142	81
Semi-Medium	55	24	165	54	103	82
Medium	31	95	17	20	122	0
Large	5	0	184	2	109	0
CV (percent)	91	85	70	94	28	92

Source: Same as Table 3.8.

In north India, this variation was most in Uttar Pradesh (105 percent) and Bihar (101 percent). In other north Indian states, it was below 100 percent. Haryana, Rajasthan, Uttar Pradesh and West Bengal were the states, where the marginal farmers were more inclined to take loan for the purpose of other expenditure. Whereas, in Punjab, Gujarat and Madhya Pradesh, the large farmers were in competition with the marginal farmers to borrow for the purpose of other expenditure (Table 3.16 (ii)).

Table 3.16 (ii): Farm Size wise Amount Borrowed (Rupees per 1000) by Farmers' Households for Other Purposes in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	103	100	201	41	197	74	112	222
Small	190	32	51	20	84	56	41	125
Semi-Medium	107	82	97	16	81	22	33	118
Medium	0	1	68	49	40	46	18	0
Large	0	94	0	0	342	2	0	
CV (percent)	101	70	89	79	83	71	105	78

Source: Same as Table 3.8.

3.6 SOURCES OF LOAN

If farmers borrow for different purposes, then they borrow from different sources too. There are different sources and at the All India level, banks seem to be the most important source as the maximum amount (Rs. 356/1000), is borrowed from them by the farmers. Then follows the agricultural/professional money lender from whom Rs. 257 is borrowed. Next are the cooperative societies, which had disbursed Rs. 196 as loans to the farmers. From relatives & friends and traders, the farmers had taken loans of Rs. 85 and Rs. 52 respectively. The government and other sources were poor in granting loans to the farmers as they granted Rs. 25 and Rs. 21 respectively. Lastly, the professionals, like doctors, lawyers, etc, were the ones from whom the farmers had taken only Rs. 9 as loans (*see appendices*).

In the northern Indian states, except for Punjab in rest of the states, the farmers had borrowed the most from banks. While, in Punjab maximum borrowing (36.3 percent) was made from the agricultural money lender. Similar was the case in the central Indian state of Rajasthan where 36.5 percent of the amount was borrowed from the agricultural moneylender. In Madhya Pradesh and Chhattisgarh, banks were the prominent source for granting loans to the farmers; and in Gujarat, the cooperative societies were the major distributors of loans.

In the eastern Indian states the farmers had borrowed most from the banks. But in Bihar where 37 percent of the amount was borrowed from banks the second most prominent source of loan was the agricultural money lender from whom 32.8 percent of the amount was borrowed.

The southern Indian states had wide variation in borrowing from varied sources. In the southern Indian states of Maharashtra, Tamil Nadu, Karnataka, Kerala and Andhra Pradesh; only Karnataka and Kerala were the ones where maximum proportion of farmers had borrowed from banks. In Andhra Pradesh and Tamil Nadu 53.4 percent and 39.7 percent of the amount was borrowed from agricultural moneylender. These two states are the topmost states in which maximum proportion of amount was borrowed from the agricultural moneylenders. In Maharashtra, it were the cooperative societies from where the farmers had borrowed the maximum proportion of sum.

Finally, shifting our attention to the northeast, we find that, in Assam, Mizoram, Nagaland and Tripura, the banks were the main source of granting loans. In Tripura 60.5 percent of the amount was borrowed as a loan from the banks and this is the highest proportion in India. In Manipur

and Meghalaya, relatives and friends were the major source of loans. In Meghalaya, 80.9 percent of the loans were taken from relatives and friends. In Sikkim, government was the major source of borrowing loans as 34.8 percent of the loans were taken from them.

Summing up, it can be said that, except for the northeastern states, banks were the major source of loans followed by the agricultural moneylenders. An important thing to note is that wherever the amount borrowed from the agricultural moneylender is the highest, in those states the level of indebtedness is also high.

A correlation was run between the level of indebtedness and the amount borrowed from various sources. The results are mentioned in the table below. From the results, we infer that, the correlation between the level of indebtedness and the amount borrowed from cooperative societies and money lender is positive and also significant (at 99 percent level). The correlation between the level of indebtedness and the amount borrowed from relatives and friends is negative (correlation coefficient being -.691) and also significant (at 99 percent level) (Table 3.17).

Table 3.17: Correlation between Level of Indebtedness and Amount Borrowed from various Sources

		IFHH	GOVT	COOPSOC	BANK	MONLEN	TRADER	RELFRENZ	DOCLAW	OTHERS
IFHH	Pearson Correlation	1.000	-.303	.588**	.072	.504**	-.123	-.691**	.356	-.253
	Sig. (2-tailed)	.	.117	.001	.717	.006	.531	.000	.063	.193
	N	28	28	28	28	28	28	28	28	28

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

IFHH 'percentage of indebted farmers' household'

GOVT 'government'

COOPSOC 'cooperative society'

BANK 'bank'

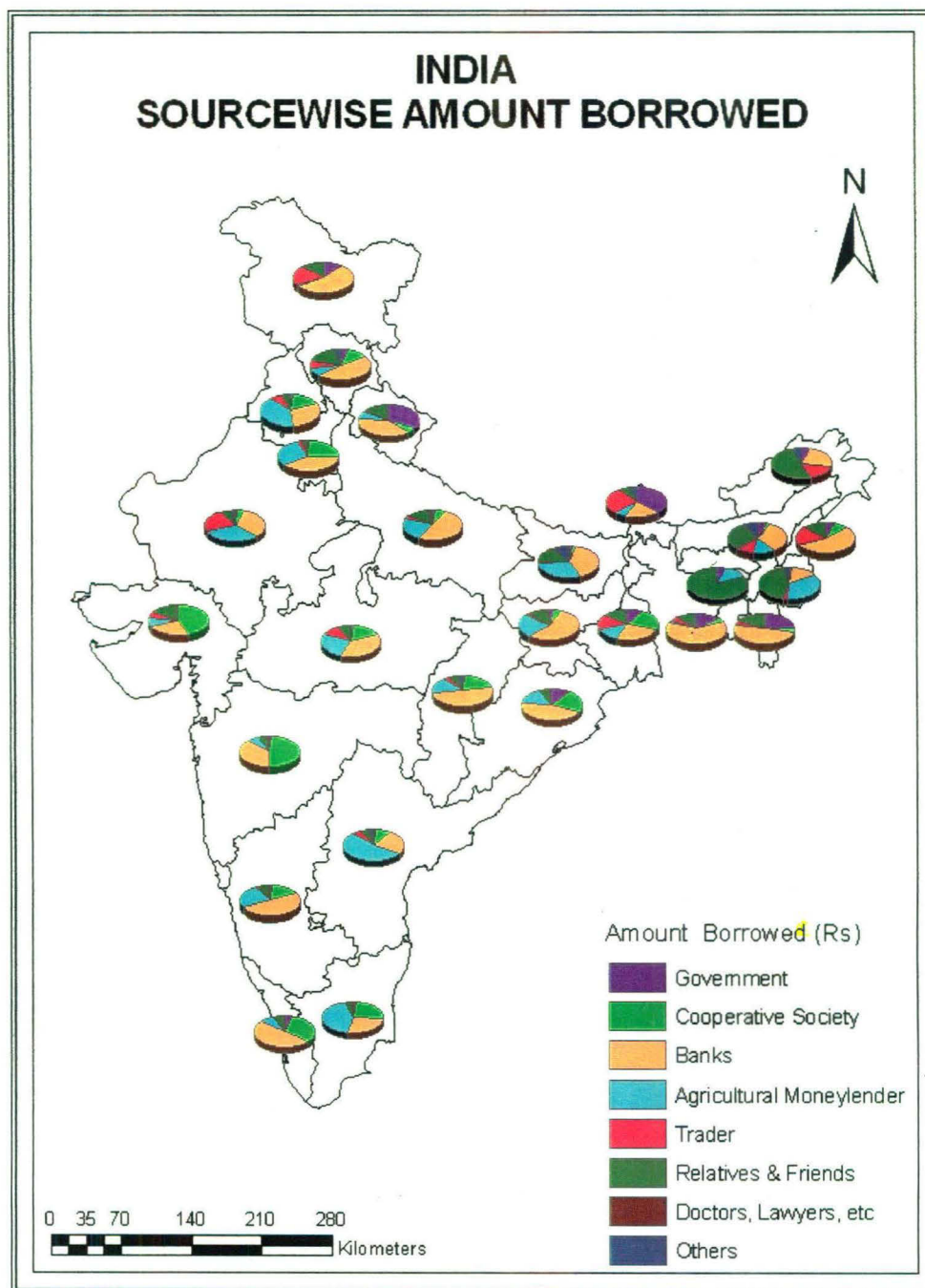
MONLEN 'money lender'

TRADER 'trader'

RELFRENZ 'relatives and friends'

DOCLAW 'doctors and lawyers' & OTHERS 'others'

Fig. 3.6: Statewise Amount Borrowed from different Sources



3.6 (i) Farm size wise distribution of Loan Borrowed from different Sources

The loans borrowed across farm size has a great spatial variation, so, for facilitation in analysis, a comparison of north Indian and south Indian states have been made (only major states have been taken). The coefficient of variation of loan borrowed, from different sources, across farm size has been derived and taking the variation of loan borrowed across farm size, the analysis is carried forward.

At the All India level, among different sources, the loans taken from cooperative societies across farm sizes had the least variation (15 percent), and the amount borrowed was directly proportional to farm size, i.e., greater the farm size, greater was the amount taken as loan from cooperative societies. Similarly, the variation across farm size was 17 percent when the source of loan was banks and here too, the amount taken was directly proportional to the farm size. When some amount was borrowed from the agricultural moneylender, then variation of that borrowing across farm size was 27 percent. But from the agricultural moneylender the amount borrowed was mainly by the farmers of the marginal and small farm size classes. The variation in the amount of loan disbursed across farm size was 43 percent when it was taken from a trader. Generally, large farmers had taken greater sum from him than the farmers of the other farm size classes. The variation in loans borrowed across farm size was 47 percent, 52 percent and 55 percent, when it was borrowed from relatives & friends, government and other sources respectively. From all these three sources, the loans were mainly taken by the marginal farmers in comparison to the farmers of the other farm size categories. Other professionals in the village such as doctors, lawyers etc. , were poor sources of loans as the variation in the loans taken from them across farm size was high (77 percent). And from them, it were the medium sized farmers who had borrowed the most (Table 3.18).

Table 3.18: Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from various sources in India

Farm Size	GOVT	CO-OP SOCIETY	BANKS	MONEY LENDER	TRADER	REL & FRENZ	PROF'LS	OTHERS	ALL
Marginal	39	155	281	316	47	122	11	28	1000
Small	17	205	354	259	42	88	8	26	1000
Semi-Medium	15	226	410	234	47	51	4	14	1000
Medium	13	230	445	167	61	56	15	12	1000
Large	17	232	427	172	106	40	0	6	1000
All Sizes	25	196	356	257	52	85	9	21	1000

Source: Calculated from Table 3 showing per thousand distribution of outstanding loan (in Rs.) by source of loan for each size class of land possessed by farmer household. Also see table 30 of Appendix I

3.6 (i) (a) Loans Borrowed from the Government

Analyzing the loans taken from government sources, we find a great deal of variation among states of north India and south India. In the southern Indian states of Kerala and Orissa, the variation in the loans taken from government sources across farm size was too high. It was 125 percent in Orissa and 205 percent in Kerala. In both these states, the small and the marginal farmers who had taken maximum amount of loan than the farmers of other size category. In Karnataka and Maharashtra, where the variation was 69 percent and 98 percent respectively, in these states, it were the medium and marginal farmers who had borrowed the most. Andhra Pradesh and Tamil Nadu witnessed a variation in the loan disbursed through government sources across farm sizes to be 98 percent and 96 percent respectively, in these states, the semi-medium farmers were the prominent ones to borrow. Except Maharashtra, in rest of the southern Indian states, the large farmers did not borrow any amount from the government sources. In Maharashtra alone, the amount borrowed by the large farmers from the government sources was only Re.1 (Table 3.19 (i)).

Table 3.19 (i): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Government in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	17	25	69	15	18	131
Small	3	14	2	5	19	178
Semi-Medium	13	14	0	6	37	22
Medium	4	29	3	28	3	0
Large	0	0	0	1	0	0
CV (percent)	98	69	205	98	96	125

Source: Same as Table 3.18.

In the northern Indian states, the variation in the amount borrowed by different size class of farmers was too high. Gujarat, Haryana and West Bengal, which had a variation of 154 percent, 116 percent and 58 percent respectively in borrowing through the government sources, were the states in which maximum borrowing from government was done by the medium size class of farmers. Madhya Pradesh encountered a variation of 136 percent in the loans borrowed from government across farm sizes, and in this state the large farmers benefited the most out of it: In Bihar, this variation was 153 percent and in this state, the semi-medium farmers had borrowed the most (Rs. 66/1000) followed by the marginal farmers who borrowed Rs. 20/1000. Whereas in Punjab, where the variation in loan borrowed was 148 percent, over there, the marginal farmers had borrowed the maximum amount (Rs. 54/1000) followed by the semi-medium farmers who borrowed Rs.26/1000. In Uttar Pradesh and Rajasthan, which witnessed a variation of 93 percent and 56 percent respectively, the marginal, small and the semi-medium farmers were the main borrowers. In Uttar Pradesh, Punjab, Gujarat and Bihar, the large farmers didn't take a single penny as loan from the government (Table 3.19 (ii)).

Table 3.19 (ii): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Government sources in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	20	3	4	26	54	20	26	111
Small	5	0	4	10	0	4	39	54
Semi-Medium	66	2	1	4	26	10	26	30
Medium	0	14	46	3	1	18	1	132
Large	0	0	38	88	0	8	0	
CV (percent)	153	154	116	136	148	56	93	58

Source: Same as Table 3.18.

3.6 (i) (b) Loans Borrowed from Cooperative Society

This source of loan was relatively more accessible for all size class of farmers as comparatively less variation was seen in the borrowing across different farm sizes in some states. Amidst the southern Indian states, Orissa and Andhra Pradesh had variation of 70 percent and 49 percent respectively. In these two states, the semi-medium and medium size class of farmers prominently approached the cooperative societies for loans. Karnataka which witnessed a variation of 53 percent had small and semi-medium farmers who had borrowed the most from cooperative societies. While in Kerala having variation of 47 percent, the marginal, small and large farmers took the maximum amount of loan from this source of credit. Only Orissa was the

state in which the large farmers had not taken any amount from the cooperative societies (Table 3.20 (i)).

Table 3.20 (i): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Cooperative Society in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	71	141	298	538	207	142
Small	111	223	293	458	235	208
Semi-Medium	152	227	119	496	325	333
Medium	134	142	88	443	212	355
Large	30	29	240	508	114	0
CV (percent)	49	53	47	8	34	70

Source: Same as Table 3.18.

In the northern Indian states, this variation across farm size was lowest in Punjab with 28 percent and highest in Bihar with 75 percent. In Gujarat, Haryana and Madhya Pradesh the variation was 38 percent (same in Gujarat and Haryana) and 51 percent respectively. In Gujarat and Madhya Pradesh, the medium and large farmers were the prominent borrowers, whereas, in Haryana, it were the marginal, small and semi-medium farmers who were the major ones. In Bihar, where this variation was maximum (75 percent), the small farmers had taken maximum amount of loan from the cooperative societies. Punjab, Uttar Pradesh and West Bengal, had variation of 28 percent, 49 percent and 54 percent respectively and in these states, the small and the semi-medium farmers were seen borrowing the most from the cooperative societies. So, except for Gujarat and Madhya Pradesh, in rest of the states, most of the amount was distributed as loan amidst the small, semi-medium and medium size class of farmers (Table 3.20 (ii)).

Table 3.20 (ii): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Cooperative Society in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	18	180	228	90	107	49	39	154
Small	53	413	306	135	220	53	80	278
Semi-Medium	9	410	269	152	217	50	113	259
Medium	13	597	156	212	173	98	86	58
Large	23	575	110	333	146	34	32	
CV (percent)	75	38	38	51	28	43	49	54

Source: Same as Table 3.18.

3.6 (i) (c) Loans Borrowed from Banks

Banks were the other major source of disbursing loan. They also had relatively less variation across farm size in almost all the states. In the southern states, the least variation was in Maharashtra (19 percent) and highest in Andhra Pradesh and Tamil Nadu (50 percent). It was 44 percent in Karnataka, 45 percent in Orissa and 28 percent in Kerala. In Tamil Nadu, Andhra Pradesh, Karnataka and Maharashtra, the maximum amount of loan was taken by the medium and large farmers from the banks. While, in Kerala and Orissa, the semi-medium and medium farmers had taken the maximum amount of loans from the banks (Table 3.21 (i)).

Table 3.21 (i): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Banks in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	142	371	420	254	189	449
Small	152	350	634	325	361	335
Semi-Medium	250	493	845	336	290	529
Medium	348	699	582	416	528	614
Large	465	941	463	402	715	132
CV (percent)	50	44	28	19	50	45

Source: Same as Table 3.18.

In the northern Indian states, maximum amount of variation was in West Bengal (72 percent) and the least in Madhya Pradesh (23 percent). In rest of the states, the variation was 49 percent in Bihar, 44 percent in Gujarat, 34 percent in Haryana, 32 percent in Punjab, 30 percent in Rajasthan and 35 percent in Uttar Pradesh. In Gujarat, Haryana and Rajasthan, it were the large and semi-medium farmers who had taken maximum amount of loans from the banks, whereas in Uttar Pradesh and Madhya Pradesh, it were the large and medium size class of farmers who had borrowed the maximum amount from the banks. West Bengal and Bihar had a greater number of small and semi-medium farmers who depended the most upon banks. Semi-medium and medium farmers in Punjab were seen rushing for loans from banks (Table 3.21 (ii)).

Table 3.21 (ii): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Banks in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	254	172	301	295	202	140	339	229
Small	603	239	310	382	271	272	566	469
Semi-Medium	559	437	594	312	369	341	659	465
Medium	183	191	392	516	301	303	798	23
Large	678	425	599	418	155	340	950	
CV (percent)	49	44	34	23	32	30	35	72

Source: Same as Table 3.18.

3.6 (i) (d) Loans Borrowed from Agricultural/Professional Money Lender

The agricultural and professional money lender of the village was the most popular source of disbursing loan among farmers possessing different sizes of land. The variation in loan taken from money lender across farm size was highest in Kerala with 193 percent, Orissa (120 percent) and Karnataka (72 percent); among the southern Indian states. In these three states, along with Tamil Nadu and Andhra Pradesh (where the variation was 53 percent and 36 percent respectively), marginal and small farmers were interested the most in borrowing from the professional money lender. In Kerala and Orissa, none of the large farmers had taken loans from the agricultural money lender (Table 3.22 (i)).

Table 3.22 (i): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Agricultural/Professional Money Lender in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	614	286	100	83	506	183
Small	546	302	13	70	299	130
Semi-Medium	502	166	0	62	286	32
Medium	394	84	0	61	244	0
Large	198	21	0	58	63	0
CV (percent)	36	72	193	15	56	120

Source: Same as Table 3.18.

In the northern India, this variation across farm size was quite high in all the states. It was maximum in Gujarat with 109 percent, followed by Uttar Pradesh (105 percent); and in both these states, the marginal and small farmers were frontrunners in borrowing from the private money lenders. In Gujarat, no borrowings from the private money lenders were made by the

large farmers. The variation was also high in Bihar (84 percent) and West Bengal (78 percent), and in these two states, the medium sized farmers followed by the marginal farmers had borrowed the most, the situation was just on the contrary in Haryana where the variation in the loans borrowed from the private money lender across farm size was 44 percent. In Rajasthan and Madhya Pradesh, where the variation was 41 percent and 59 percent respectively, the small and the semi-medium farmers were seen borrowing from this source the most. Punjab witnessed the least variation across farm size with 37 percent. This state was quite different from the rest of the Indian states in borrowing from the private money lender, because in this state, it were the large farmers who had borrowed the maximum amount (Rs. 653/1000) (Table 3.22 (ii)).

Table 3.22 (ii): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Agricultural/Professional Money Lender in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	394	162	356	309	305	528	299	157
Small	198	70	340	211	355	410	143	58
Semi-Medium	227	43	99	349	311	369	103	26
Medium	750	17	217	108	359	251	15	222
Large	39	0	197	64	653	167	6	
CV (percent)	84	109	44	59	37	41	105	78

Source: Same as Table 3.18.

So, in brief, we can say that, borrowing from private money lender was quite popular amidst the marginal and small farmers in almost all the states (except Punjab) because it is free from paperwork hassles and quite friendly for these categories of farmers, of whom many are illiterate. Taking advantage of this fact, the money lender charge high rates of interest and make good profit.

3.6 (i) (e) Loans Borrowed from Trader

The trader who sold the agricultural tools and implements is another major source of loan. In the southern Indian states, the variation in loan taken from trader across farm size was as high as 126 percent in Andhra Pradesh and Orissa, followed by Kerala (105 percent), Karnataka (76 percent), Tamil Nadu (74 percent), and Maharashtra (68 percent). The variation was high as the marginal, small and semi-medium farmers had taken relatively greater amount as loans than the other size class of farmers (Table 3.23 (i)).

Table 3.23 (i): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Trader in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	33	24	21	13	4	7
Small	48	14	9	7	4	15
Semi-Medium	54	32	13	9	8	3
Medium	26	1	0	6	3	0
Large	298	9	0	0	0	0
CV (percent)	126	76	105	68	74	126

Source: Same as Table 3.18.

Amidst the northern Indian states, this variation was comparatively more than the southern Indian states. It was as high as 173 percent in Gujarat, followed by 113 percent in Bihar; Madhya Pradesh, Uttar Pradesh and West Bengal had a variation of 52 percent, 63 percent and 63 percent respectively and in these states, the marginal and small farmers showed greater dominance in borrowings from the trader. In Gujarat and Bihar, the large farmer did not borrow any amount from the trader. Haryana and Rajasthan had a variation of 96 percent and 44 percent respectively and in these states, it were the large and medium size class of farmers who had borrowed the most. In Punjab, which witnessed a variation of 58 percent saw a situation where the medium farmers borrowed most (Table 3.23 (ii)).

Table 3.23 (ii): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Trader in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	14	148	21	125	84	146	40	126
Small	4	18	9	142	29	133	24	69
Semi-Medium	0	11	13	76	58	158	14	135
Medium	9	5	99	51	134	235	9	17
Large	0	0	55	39	46	350	12	
CV (percent)	113	173	96	52	58	44	63	63

Source: Same as Table 3.18.

So, in brief, in all the southern Indian states (except Andhra Pradesh), the marginal and small farmers were front runners in borrowing from the trader, whereas in the northern Indian states, except for Haryana, Punjab and Rajasthan, in rest of the states, the marginal, small and semi-medium farmers borrowed relatively more from the traders

3.6 (i) (f) Loans Borrowed from Relatives and Friends

Relatives and friends were also an important source of credit for the farmers. In the southern Indian states, the variation in the loan borrowed from them across farm size was greatest in Orissa (154 percent), followed by Kerala (95 percent) and Andhra Pradesh (89 percent). In Orissa, it was the major source of loan for the large farmers as they borrowed Rs. 868 from them. Similar situation prevailed in Kerala, where large and medium farmers borrowed Rs. 297 and Rs. 293 respectively. In rest of the southern states, the marginal, small and semi-medium farmers borrowed more than the large and medium sized farmers (Table 3.24 (i)).

Table 3.24 (i): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Relatives & Friends in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	77	115	67	69	62	82
Small	69	82	46	74	72	96
Semi-Medium	10	41	23	77	47	79
Medium	21	30	293	31	6	32
Large	9	0	297	29	0	868
CV (percent)	89	84	95	43	87	154

Source: Same as Table 3.18.

Compared to the southern Indian states, most of the northern Indian states experienced greater variation in the loan taken from this source across farm size. Highest variation was seen in Haryana (142 percent), followed by Punjab (120 percent) and West Bengal (113 percent). In Punjab, Haryana, Uttar Pradesh, Gujarat, Madhya Pradesh and Rajasthan, it were the marginal and small size class of farmers who had taken more from their relatives and friends. In Bihar, the variation was 77 percent and in this state, it were the large farmers who borrowed the most followed by the marginal farmers (Table 3.24 (ii)).

Table 3.24 (ii): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Relatives & Friends in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	142	283	88	123	207	88	202	189
Small	78	254	13	104	115	82	128	57
Semi-Medium	54	98	19	97	10	49	66	40
Medium	45	154	6	105	31	54	43	549
Large	260	0	0	59	1	83	0	
CV (percent)	77	73	142	24	120	26	90	113

Source: Same as Table 3.18.

3.6 (i) (g) Loans Borrowed from Professionals

The professionals like doctors, lawyers etc were an unimportant source as their proportion in disbursing credit among all the sources was lowest in almost all the states except in the northern Indian states of Gujarat, Haryana and Rajasthan. The variation in these states was 198 percent, 200 percent and 100 percent respectively. In Gujarat, Rajasthan, Bihar, Punjab, Uttar Pradesh and West Bengal, it were the small and marginal farmers who borrowed relatively more than the other category of farmers from their relatives and friends (Table 3.25 (i)).

Table 3.25 (i): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Professionals in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	13	38	0	5	10	20	25	10
Small	18	4	1	6	10	40	14	1
Semi-Medium	0	0	5	6	9	0	8	8
Medium	0	0	84	5	0	30	25	0
Large	0	0	2	0	0	0	0	
CV (percent)	140	198	200	57	92	100	76	105

Source: Same as Table 3.18.

In the southern Indian states of Orissa, Tamil Nadu, Maharashtra and Kerala, again the small and marginal farmers had borrowed the most from this particular source. While in Andhra Pradesh and Karnataka, the medium size class of farmers borrowed the most from them (Table 3.25 (ii)).

Table 3.25 (ii): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Professionals in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	6	4	15	4	1	0
Small	6	0	0	7	3	4
Semi-Medium	2	3	0	2	0	1
Medium	36	10	0	2	2	0
Large	0	0	0	0	0	0
CV (percent)	147	120	224	88	121	173

Source: Same as Table 3.18.

3.6 (i) (h) Loans Borrowed from Other Sources

The loans borrowed from other sources had a wide variation all over India, and alike the professional, this source was also less important. In the southern Indian states, Orissa, Maharashtra, Karnataka and Andhra Pradesh were the ones where the variation in borrowings across farm size was large and the small and marginal farmers were responsible for this. Whereas, in Tamil Nadu and Kerala, it were large and medium farmers respectively who were responsible for a huge variation of 167 percent and 151 percent respectively (Table 3. 26 (i)).

Table 3.26 (i) Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Other Sources in South India

Farm Size	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Orissa
Marginal	41	34	11	24	12	5
Small	65	16	3	53	8	34
Semi-Medium	16	24	0	12	6	2
Medium	37	5	34	13	2	0
Large	0	0	0	2	109	0
CV (percent)	78	88	151	94	167	178

Source: Same as Table 3.18.

In the states of northern India, similar situation prevailed. The variation across farm size was high in all the states. In the states of Bihar, Haryana, Madhya Pradesh, Punjab and Uttar Pradesh, it were the small and marginal farmers who took maximum amount as loans from this source. While, in West Bengal, Rajasthan and Gujarat, it were the semi-medium and medium farmers who had borrowed the most (Table 3.26 (ii)).

Table 3.26 (ii): Farm size wise Amount Borrowed (Rupees per 1000) by Farmers' Households from Other Sources in North India

Farm Size	Bihar	Gujarat	Haryana	Madhya Pradesh	Punjab	Rajasthan	Uttar Pradesh	West Bengal
Marginal	143	13	1	28	33	10	31	25
Small	40	2	16	9	0	7	5	14
Semi-Medium	85	0	0	4	0	22	11	36
Medium	0	21	0	2	0	12	23	0
Large	0	0	0	0	0	17	0	
CV (percent)	114	131	205	133	224	43	91	82

Source: Same as Table 3.18.

3.7 CONCLUSION

In sum, it can be said that there is a lot of variation in the level of indebtedness across states; the agriculturally developed states are relatively the most indebted ones. It has also been observed that the farmers' households who derive their income from cultivation are the more indebted in almost all the states than the ones who have other sources of income. But indebtedness amongst farmers' households has a wide fluctuation across social groups in different regions. In the northern and the eastern region, the 'other' category of farmers are most indebted followed by the farmers of the SC social group. In the central and the southern region the OBC farmers are the most indebted followed by the ST and the SC farmers respectively. In the northeastern region which has the highest proportion of ST population in the country. In this region, the farmers of the ST social group are the most indebted followed by the farmers of the 'other' social group. Except for the northern and the northeastern region, wherever the OBC farmers are the most indebted, in those states the prevalence of indebtedness is also high. Though this pattern has a lot of bearing on the social composition of cultivators in the different states, what is significant is that the social groups from relatively higher social strata tend to borrow more in the developed states.

Farm size wise, the incidence of indebtedness is confined to the marginal and small farmers in all the Indian states. Once again, relatively, in states like Punjab and Haryana in Northern India and Maharashtra and Gujarat in Western India and Karnataka in South India, medium to large farmers borrow more in terms of percentage of households indebted compared to the India average in the corresponding groups. Primary surveys have revealed that the economic and social groups are in many cases coterminous. Also, literature reveal (Sen and Raju, 2006) that larger farmers are the

ones that participate more effectively in high-value commercial agriculture. This, along with our finding that better off socio-economic groups tend to borrow more from developed regions is indicative of the fact that high-value commercial agriculture is probably the process that is causing distress leading to higher levels of indebtedness in the developed states.

Regarding the purpose for which the loan was borrowed, a significant positive relationship was found between the level of indebtedness and the amount borrowed for the purpose of current expenditure in farm business. It has been observed that for the capital and current expenditure in farm business almost every category of farmer had taken a good amount of loan in all the states, and this amount increased with an increase in farm size. But for rest of the purposes (except education), in majority of the states, only the marginal and the small farmers were seen inclined to take loans. If one compares the northern and southern states with respect to loans taken for purposes other than farm business, what comes out is that while farmers in the northern India had taken loans mostly for the purpose of marriages and social ceremonies, their counterparts in the southern India, took loans primarily for consumption expenditure, non-farm business and other expenditure.

Finally, when we look at the different sources from which the loans were borrowed, we find a significant positive relationship between the level of indebtedness and the loans borrowed from cooperative society and the private moneylender. By observing the nature of borrowings from different sources the argument that can be illustrated is that the government proved to be a very poor source of credit for the farmers, because the share of the government in granting the loans was very poor, and wherever, it granted loan, the large farmers were seen taking the maximum advantage of it, leaving the marginal and small farmers in economic crisis. The cooperative societies had confined it to the semi-medium and medium farmers. Banks involved a lot of paperwork and so the poor illiterate farmers were seen neglected. From the banks again the large farmers were able to derive the maximum amount as loans. So, finally, it was left to the agricultural moneylender and the trader to support the marginal and small farmers. They disbursed loans to them without any paperwork but burdened them with a huge rate of interest. The other sources of loans such as relatives and friends, professionals like doctors and lawyers and other sources were unimportant. Concluding the argument, we can only say that as per the credit disbursal is concerned, the institutional sources of credit support the semi-medium, medium and large farmers, while, the marginal and the small farmers are bound to rely upon the non-institutional sources of credit up to a very large extent.

CHAPTER 4
INDEBTEDNESS AND ITS RELATIONSHIP WITH FACTORS AFFECTING
AGRARIAN DISTRESS

4.1 INTRODUCTION

So far we have analyzed the nature of indebtedness across states, farm size, social groups and sources of income. We have also looked at the purpose of taking loans and the different sources from where they were taken. Our earlier analysis shows that while the states having high levels of yield were characterised with high degrees of commercialization and high cost of cultivation, the states having low levels of yield were mostly the ones that also had high index of instability of yield. So, at one end of the spectrum we have developed states like Punjab, Haryana, Karnataka, and Andhra Pradesh on one hand that have commercial agriculture, and are presumably also the ones that respond more positively to the opportunities to an open and competitive world market. On the other extreme, we have Orissa, Bihar Madhya Pradesh that are underdeveloped, having rainfed agriculture with low levels of yield and high variability in production. Traditionally, these were the very reasons for indebtedness. However, the findings of our third chapter indicate that many of the developed states have higher incidence of indebtedness compared to the ones that are less developed. In this chapter, the relationship between incidence of indebtedness and possible reasons for agrarian distress is examined in greater detail.

In earlier times, when the irrigation infrastructure was not so developed then the Indian farmer was fully dependent on the rainfall as a major source of irrigation. The instability in the occurrence of timely rainfall also led to instability in the crop production and yield. Because of this reason the yield level used to be low. This situation is also the same in the regions which have lesser access of rainfall and irrigation sources. Because of the instability in yield and the fluctuation in level of yield farmers used to borrow from different sources and in many areas it is the non-institutional sources of credit from which the farmers used to borrow. These sources even now charge exorbitant rates of interest due to which when the debt gets accumulated over the years, the amount to be paid as interest becomes more than the principal sum.

In recent times the areas which are agriculturally developed i.e., the ones having better irrigation facilities, availability of HYV seeds, fertilizers, timely availability of credit, good rural infrastructure etc, are the ones which are now emerging as states where the farmers are borrowing for the purpose of reaping big harvests and consequently huge profits. Even in these areas the farmers borrow and there are two reasons as to why they borrow more. Firstly, the investments that are required for this kind of cultivation system are more both in terms of capital and current expenditure. Secondly, the expected profits from this cultivation are more, making them risk-takers. Also, they need credit from a source where the credit is available is round the clock. In India, the institutional credit is available only at a certain point in a year but non-institutional credit is available all through the year, so the farmers who desire to maximize their production do not hesitate to borrow from the non-institutional sources of credit which charge great sums as interest amount. But the problem of indebtedness arises in these regions when the crop fails and the farmers have to repay the borrowed money. By the end of the year, the sum to be repaid gets accumulated in such a large quantity that the farmers have to again borrow a huge amount so as to earn profit up to such a large extent that they repay the sum of the previous year and of the current year along with the interest. So, in this manner the farmers get trapped in the trap of indebtedness.

4.2 CAUSAL FACTORS BEHIND INDEBTEDNESS

The reasons behind indebtedness are the instability in food grain yield, the level of yield/net returns and the high cost of cultivation. The instability in food grain yield was carved out by clubbing Chhattisgarh with Madhya Pradesh, Jharkhand with Bihar and Uttaranchal with Uttar Pradesh. So taking this into consideration the total indebted farmers' households of these three couplets of states were clubbed (i.e., Chhattisgarh clubbed with Madhya Pradesh, Jharkhand clubbed with Bihar and Uttaranchal clubbed with Uttar Pradesh) and then the percentage of indebted farmers' households were derived.

A multiple regression was run between these three factors (level of yield, level of net returns and cost of cultivation) and the level of indebtedness (this regression was run with 24 observations because the data for level of yield of the three newly formed states was not taken); and a bivariate regression was run between the instability in food grain yield and the level of

indebtedness and their results are as given in table 4.1 (i & ii) and table 4.2 (i & ii) respectively. The two regression analyses were run separately because in the latter case, Mizoram had an unusual figure of instability in food grain yield and was therefore removed from the analysis.

Table 4.1 (i): R² Value

R	R Square	Adjusted R Square	Std. Error of the Estimate
.726	.527	.456	14.63630

(Constant), COC, NR, YLD

Table 4.1 (ii): Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	42.375	7.913		5.355	.000
YLD	.003	.005	.108	.555	.585
NR	-.001	.000	-.665	-4.084	.001
COC	.002	.001	.444	2.344	.030

Dependent Variable: IFHH

Independent Variable:

YLD 'level of yield'

NR 'level of net returns'

COC 'cost of cultivation'

Table 4.2 (i): R² Value

R	R Square	Adjusted R Square	Std. Error of the Estimate
.016(a)	.000	-.047	20.28630

(Constant), INSGYIELD

Table 4.2 (ii): Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	44.807	9.524		4.704	.000
INSGYIELD	-.054	.749	-.016	-.072	.944

Dependent Variable: IFHH

Independent Variable:

INSGYIELD 'instability in food grain yield'

The results in table 4.1 (i) show that the R² value is 0.527 which says that 52.7 % variation in the level of indebtedness is explained by the variation in the level of yield, level of net returns and the cost of cultivation. The regression coefficients mentioned in table 4.2 (ii) shows that the

level of net returns is negatively related with the level of indebtedness and is also significant. It means that lesser the level of net returns higher will be the degree of indebtedness because if the net returns are low then, in that case the farmer will be compelled to borrow so as to make out a living and invest in farm activities. Other than this a positive relationship exists between the cost of cultivation and the level of indebtedness and is also significant. Both these results are also shown through scatter diagram in Figure 4.1 & 4.2 respectively. A negative relation also exists between the level of yield and the degree of indebtedness but it is not significant. It means that higher the cost of cultivation, higher is the level of indebtedness.

Fig 4.1: Scatter Diagram showing relationship between Level of Net Returns and Level of Indebtedness

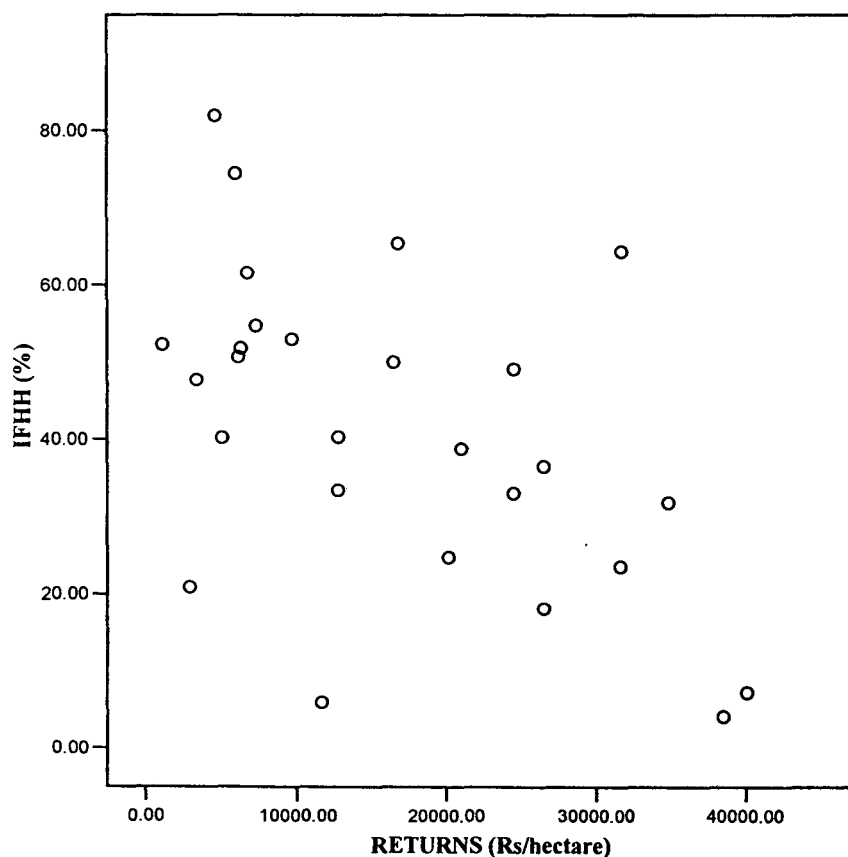
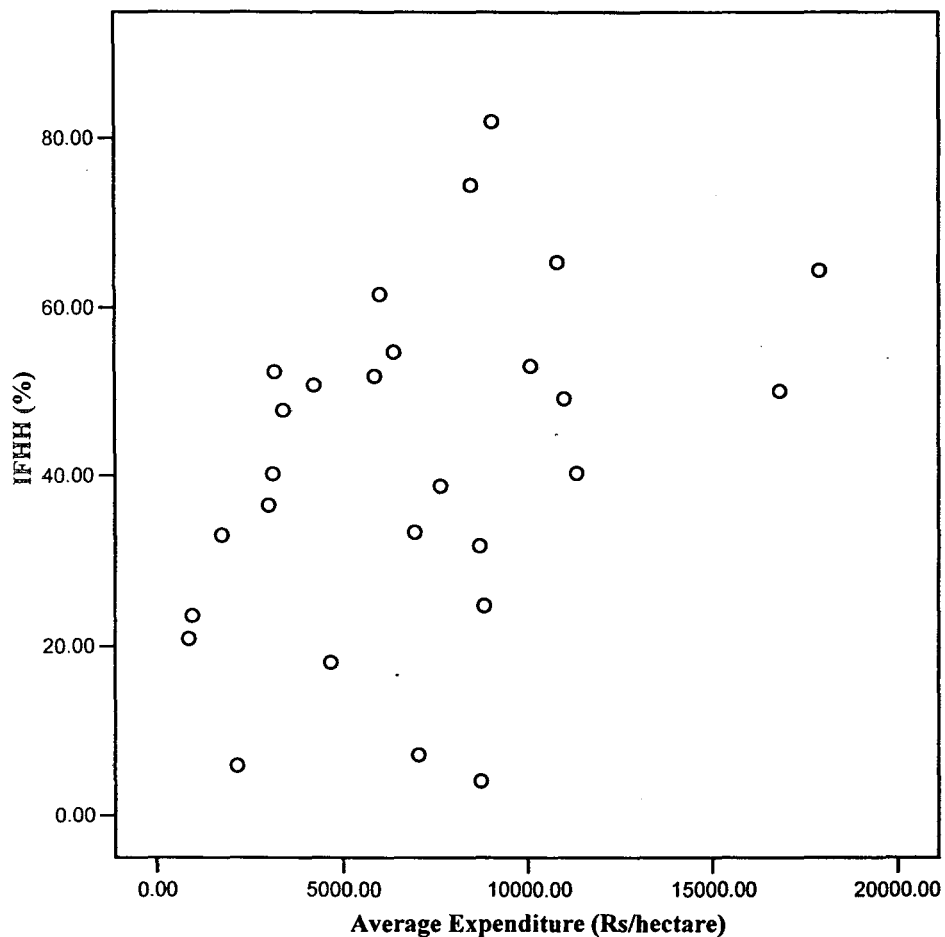


Fig 4.2: Scatter Diagram showing relationship between Level of Indebtedness and Cost of Cultivation



The table 4.2 (i) show the R^2 value which is 0.00 and it means that no variation in the level of indebtedness is explained by the variation in the instability in food grain yield. The regression coefficients derived in table 4.2 (ii) are also not significant.

Therefore, we can say that it is the level of net returns and the cost of cultivation which are the sole facts leading to the high level of indebtedness. Since the Beta coefficient of the cost of cultivation is more than that of the level of net returns; so it can also be said that the cost of cultivation is a more determining factor than the level of net returns. Rest of the factors such as the level of yield and the instability in food grain yield are not the ones that determine the level of indebtedness.

4.3 DESCRIPTIVE ANALYSIS OF THE CAUSAL FACTORS BEHIND INDEBTEDNESS

The statistical results mentioned above can also be brought forward in a descriptive manner through cross tabulation. The cross tabulation has been done between the various factors that lead to indebtedness and the level of indebtedness. The cross tabulation is illustrated from table 4.4 to table 4.7 and the codes specifying the level of indebtedness, the instability in food grain yield, the level of yield and net returns and the cost of cultivation are mentioned in table 4.3.

Table 4.3: Codes used in Cross Tabulation.

Level of Indebtedness (%)	Instability in Food Grain Yield	Level of Yield (kgs/hectare)	Level of Net Returns (Rs/hectare)	Cost of Cultivation (Rs/hectare)	Codes	Severity
Below 20	Below 5	Below 1000	Below 10000	Below 4000	1	Low
20-40	5-10	1000-2000	10000-20000	4000-8000	2	Moderate
40-60	10-15	2000-3000	20000-30000	8000-12000	3	High
Above 60	Above 15	Above 3000	Above 30000	Above 12000	4	Very High

Source: See table 23, table 9, table 19, table 20, table 35 & table 36 in appendix I

4.3 (i) Instability in Food Grain Yield and Level of Indebtedness

Table 4.4: Cross Tabulation between Instability in Food Grain Yield and Level of Indebtedness

Codes		INDEBTEDNESS				Total
		1.00	2.00	3.00	4.00	
INSTABILITY	1.00	2	0	1	2	5
	2.00	0	0	2	1	3
	3.00	1	5	2	2	10
	4.00	0	2	3	0	5
Total		3	7	8	5	23

INDEBTEDNESS 'level of indebtedness'

INSTABILITY 'instability in the yield of food grains'

Table 4.4 shows cross tabulation between instability in food grain yield and the level of indebtedness⁴. There are five states (Arunachal Pradesh, Assam, Kerala, Punjab and West Bengal) which have low level of instability, and amongst these states, there are three states (Kerala, Punjab and West Bengal) which have high to very high level of indebtedness. But Arunachal Pradesh and Assam are the ones which have low level of indebtedness. Andhra Pradesh, Haryana and Tripura have moderate instability in food grain yield but they have high to very high level of indebtedness. In India, ten states (Bihar, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Sikkim, Tamil Nadu and Uttar Pradesh) have high degree of instability in food grain yield, out of which Bihar, Jammu & Kashmir, Manipur, Meghalaya, Sikkim and Uttar Pradesh have low to moderate level of indebtedness, whereas, Karnataka, Madhya Pradesh, Maharashtra and Tamil Nadu have high to very high level of indebtedness. There are five states (Gujarat, Himachal Pradesh, Nagaland, Orissa and Rajasthan) which have very high level of instability in food grains. Amongst them, Gujarat, Rajasthan and Orissa has high level of indebtedness, while, Himachal Pradesh and Nagaland have moderate level of indebtedness.

Theory says that there exists a positive relationship between the instability in food grain yield and the level of indebtedness, but our output from the cross tabulation says that there is an inverse relationship between the two, i.e., wherever, the instability in food grain yield is low over there the level of indebtedness is high and vice-versa.

So, we can say that the instability in food grain yield is not a factor responsible for indebtedness.

⁴ In this cross tabulation 23 observations are used as the figures of the Indebted Farmers' Household of Chhattisgarh, Jharkhand and Uttaranchal are clubbed with Madhya Pradesh, Bihar and Uttar Pradesh because the data of instability in food grain yield for these three states couldn't be carved out. Mizoram has been excluded from the analysis because of its unusual figure in the instability in food grain yield.

4.3 (ii) Level of Yield and Level of Indebtedness

Table 4.5: Cross Tabulation between Level of Yield and Level of Indebtedness

		INDEBTEDNESS				Total
		1.00	2.00	3.00	4.00	
YIELD	1.00	0	0	4	1	5
	2.00	3	7	1	2	13
	3.00	0	1	2	1	4
	4.00	0	0	1	1	2
Total		3	8	8	5	24

INDEBTEDNESS 'level of indebtedness'

YIELD 'level of yield'

Table 4.5 shows the cross tabulation between the level of yield and level of indebtedness⁵. The table says that there are five states (Karnataka, Madhya Pradesh, Maharashtra, Orissa and Rajasthan) which have low level of yield and all these five states have high to very high level of indebtedness. The states having moderate level of yield are Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu and Uttar Pradesh. Amidst these thirteen states, except for Tamil Nadu, Gujarat and Andhra Pradesh rest of the ten states have low to moderate level of indebtedness. Tamil Nadu Gujarat and Andhra Pradesh have high to very high level of indebtedness. There are four states (Kerala, Manipur, Tripura and West Bengal) that have high level of yield and out of these states except for Manipur the rest of the states have high to very high level of indebtedness. While in Manipur the level of indebtedness is moderate. In India, there are two states (Punjab and Haryana) which have high level of yield and in both these states, the level of indebtedness is high to very high.

Theoretically, the level of yield is inversely related to the level of indebtedness but in the cross tabulation derived above, this does not applies at all.

⁵ In this cross tabulation, the data on the level of yield was not taken and therefore, the figure of indebtedness for Chhattisgarh, Jharkhand and Uttaranchal were clubbed with Madhya Pradesh, Bihar and Uttar Pradesh respectively.

4.3 (iii) Level of Net Returns and Level of Indebtedness

Table 4.6: Cross Tabulation between Level of Net Returns and Level of Indebtedness

		INDEBTEDNESS				Total
		1.00	2.00	3.00	4.00	
NETRETURNS	1.00	0	1	7	3	11
	2.00	1	1	2	1	5
	3.00	1	4	1	0	6
	4.00	2	2	0	1	5
Total		4	8	10	5	27

INDEBTEDNESS 'level of indebtedness'
NETRETURNS 'level of net returns'

There are 11 states (Andhra Pradesh, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan and Tamil Nadu) where the net returns are low. And within these states, Chhattisgarh, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Orissa and Rajasthan where the level of indebtedness is high; while in Andhra Pradesh, Karnataka and Tamil Nadu the level of indebtedness is very high. Five states of the Indian Union which include, Arunachal Pradesh, Himachal Pradesh, Punjab, Uttar Pradesh and West Bengal have moderate level of net returns, and amidst them two states (Arunachal Pradesh and Himachal Pradesh) have low to moderate level of indebtedness whereas, rest of the three states (Punjab, Uttar Pradesh and West Bengal) have high to very high level of indebtedness. Five Indian states (Assam, Bihar, Manipur, Nagaland, Sikkim and Tripura) have high level of net returns and amongst these states except for Tripura, rest of the states have low to moderate level of indebtedness. Tripura on the other hand has high level of indebtedness. Five states in India comprising Jammu & Kashmir, Kerala, Meghalaya, Mizoram, and Uttaranchal have very high level of net returns and amidst these states, except for Kerala, rest of the states have low to moderate level of indebtedness; Kerala on the other hand has very high level of indebtedness. Theoretically, if we look then there is a negative relationship between the level of net returns and level of indebtedness. And this fact applies in our study up to a very great extent; only Tripura and Kerala are exceptions to this fact because despite of high net returns the level of indebtedness is also high.

4.3 (iv) Cost of Cultivation and Level of Indebtedness

Table 4.7: Cross Tabulation between the Cost of Cultivation and Level of Indebtedness

		INDEBTEDNESS				Total
		1.00	2.00	3.00	4.00	
EXPENDITURE	1.00	1	4	3	0	8
	2.00	2	2	3	1	8
	3.00	1	2	3	3	9
	4.00	0	0	1	1	2
Total		4	8	10	5	27

INDEBTEDNESS 'level of indebtedness'
EXPENDITURE 'cost of cultivation'

Table 4.7 shows cross tabulation between the cost of cultivation and the level of indebtedness. From this table we infer that, eight states (Arunachal Pradesh, Bihar, Chhattisgarh, Jharkhand, Mizoram, Nagaland, Orissa and Rajasthan) have low cost of cultivation and out of these eight states, five states (Arunachal Pradesh, Bihar, Jharkhand, Mizoram and Nagaland) have low to moderate level of indebtedness, while the rest three states (Chhattisgarh, Orissa and Rajasthan) have high level of indebtedness. Eight Indian states (Assam, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Sikkim and Uttaranchal) have moderate cost of cultivation and out of these eight states, four states viz, Assam, Himachal Pradesh, Sikkim and Uttaranchal have low to moderate level of indebtedness, and rest of the four states that comprise Madhya Pradesh, Karnataka, Gujarat and Maharashtra have high to very high level of indebtedness. Nine states in India, Andhra Pradesh, Haryana, Jammu & Kashmir, Manipur, Meghalaya, Punjab, Tamil Nadu, Tripura and Uttar Pradesh experience high cost of cultivation and except for Jammu & Kashmir, Manipur and Meghalaya; rest of the states experience high to very high level of indebtedness. Lastly, two states i.e., West Bengal and Kerala have very high cost of cultivation and both of them have high and very high level of indebtedness respectively. The theory says that there exists a positive relationship between the cost of cultivation and the level of indebtedness. In other words, if the cost of cultivation is high, then the level of indebtedness will also be high because the high cost of cultivation will compel farmers to borrow more and while borrowing they may get trapped in the indebtedness trap. And from the results of the cross tabulation also it is clear that the similar situation exists fairly up to a certain extent. But still, there are the states like Chhattisgarh, Orissa, Rajasthan, Madhya Pradesh, Karnataka,

Gujarat and Maharashtra; where despite of low to moderate level of expenditure the level of indebtedness varies from high to very high degree.

4.4 CONCLUSION

Summing up, it can be said that all the four factors do not affect the level of indebtedness. It is only the level of net returns and the high cost of cultivation which is related with the level of indebtedness. The instability in food grain yield does not affect the level of indebtedness at all.

Our hypothesis that commercialization is a reason that farmers borrow more gets validated even at the state-level. The traditional reasons of indebtedness like low levels and high variability on agricultural production appears to be a less important reason to borrow in recent times. While the farmers in the rainfed agriculture would be risk-averse due to low and highly variable income, the farmers in the more developed states seem to be risk takers due to possibilities of high returns. It needs to be examined further in this context from a more in-depth analysis, as to whether the emerging agricultural system in more developed states like Punjab and Haryana or pockets of some industrialized states like Maharashtra, Gujarat and Karnataka leaves the farmers free to make a choice about their status of indebtedness.

CHAPTER 5

CONCLUSION

5.1 SUMMARY OF RESULTS

Farmers' suicides in the recent years have hit headlines in the recent past. It is quite startling because in so many years of practicing agriculture in this country the Indian farmer is committing suicide in the recent past. The major reasons behind suicides are various psychological factors which are not measurable and hence remain unknown. But other than that the important factor leading to suicides amongst farmers is the indebtedness. Due to change in the market forces especially after the nineties, the role of commercial agriculture has increased as it gives farmers the maximum benefit. So, in order to invest in commercial agriculture, the farmers borrow. The farmers borrow from different sources such as the government, banks, cooperative societies, agricultural moneylender, trader etc. The institutional sources of credit do not provide credit to the farmers all round the year so it is the agricultural moneylender who welcomes them with open arms, minimum paperwork hassles but exorbitant interest rates! Coupled with this, the farmer if illiterate has low knowledge and information about seeds, pesticides, fertilizers and irrigation techniques, because of which their production gets adversely affected. Finally, the monsoon plays gamble at times; and if the prior two factors work simultaneously, then a bad monsoon can prove to be the last nail in their coffins.

Suicides amongst farmers because of indebtedness are a new phenomenon in Indian agriculture. With the government paying little attention towards it and only doing lip service, it becomes an important part of discussion in the contemporary situation to save our bread producers for tomorrow we may starve.

In the present study, my objective was to look at the pattern of indebtedness and the factors affecting them from a geographical perspective. The major factors that lead to indebtedness were identified as the instability in food grain yield, level of food grain yield & the level of net returns and the high cost of cultivation. It was hypothesized that out of these three factors leading to indebtedness, the high cost of cultivation is emerging as a new factor more important than the rest of the two. The other hypothesis was that the areas of high degree of

commercialization were the areas which had higher yields and were more developed in terms of rural infrastructure.

My study proves that the instability in food grain yield, which is locally affected by the irrigation coverage, quality of irrigation and the instability in rainfall, is not affected by the same at the state level. The other factor that leads to indebtedness is the level of yield and net returns and it is governed by the extent of irrigation and the amount of rainfall and the level of rural infrastructure.

The study also shows descriptively that the areas where the level of commercialization is high are the ones which experience high level of food grain yield and net returns. It is further proved statistically that the degree of commercialization is positively related to the high cost of cultivation. Therefore, one can say that though commercialization leads to higher level of yield and net returns but simultaneously it also leads to high cost based cultivation.

The study throws light on the fact that there is a good relationship between the high level of agricultural development and high level of indebtedness because the farmers in the agriculturally developed states are risk-takers as they are more responsive to the emerging opportunities of the globalized world. So, they borrow huge sums of money and unfortunately if the crop fails then they get trapped in indebtedness.

The prevalence of indebtedness when related with the factors affecting it show a positive relationship between the high cost of cultivation and indebtedness; and a negative relationship between level of net returns and indebtedness. In other words, the high cost of cultivation and low level of net returns induces the farmer to borrow and in maximum cases the farmer tends to get indebted. On the other hand, there doesn't exist any significant relationship between indebtedness and instability in food grain yield and the level of food grain yield. Therefore, it gets proved that the recent times it is the low level of net returns and high cost of cultivation pumped by high level of commercialization which leads to indebtedness amongst the developed farming community. On the other hand, the agriculturally backward states are the ones which face distress in terms of instability in food grain yield and low level of yield, but are not the ones which are indebted because it has come out from our study that these two factors do not have a significant impact on indebtedness.

So, it goes without saying that in today's globalized world when the global world is providing lucrative offers to enhance the standard of living, the Indian farmer lives in a misguided optimism.

5.2 MAJOR FINDINGS

1. The cost of cultivation is determined by the degree of commercialization and the regression results between the two shows that an increase in commercialization by one per cent increases the cost of cultivation by Rs. 100.78 per hectare.
2. The level of indebtedness across states is positively related with the level of agricultural development i.e., if a state is more agriculturally developed it may have a high prevalence of indebtedness.
3. Amidst the various purposes for which the loans were borrowed a significant positive relationship was found between the loans borrowed for current expenditure in farm business and the level of indebtedness.
4. Amidst the various sources from which the loans were borrowed a significant positive relationship was found between the loans borrowed from cooperative societies & agricultural money lender and the level of indebtedness.
5. Finally, a regression analysis between the level of indebtedness and the factors determining it shows a significant positive relationship between the level of indebtedness and the high cost of cultivation; and a significant negative relationship between the level of indebtedness and the level of yield.

5.3 MAJOR OBSERVATIONS

1. The farmers who derive their income from cultivation are the most indebted followed by those farmers who derive their income from 'other' sources of income.
2. Indebtedness has a wide fluctuation across social groups in different regions. In the northern and the eastern region, the 'other' category of farmers are most indebted, while in the central and the southern region the OBC farmers are the most indebted and it is only in the northeastern region that the ST farmers are the most indebted.

3. Farm size wise, the incidence of indebtedness is confined to the marginal and small farmers in all the Indian states.
4. Regarding the purpose of loan taken according to farm size, all size classes of farmers had taken loans for capital and current expenditure in farm business. But apart from these two purposes, only the marginal and small farmers had taken most of the loans for different purposes. It was only for education that the large farmers had taken most of the loans.
5. In the north-south comparison, apart for capital and current expenditure in farm business, farmers in the northern Indian states, had taken loans for the purpose of marriages and social ceremonies. Whereas, in the southern Indian states, the farmers took loans for consumption expenditure, non-farm business and other expenditure, apart from taking loans for expenditure in farm business.

So, concluding the arguments mentioned above it can be said that the indebtedness as a problem can be viewed from the perspective of the factors governing the market forces as they are the ones which are responsible behind indebtedness. Apart from market forces, the credit disbursement system has to be properly taken care of so that the financial requirements of the farmers are taken care of in time. The role of extension services in providing good quality information to the farmers can also prove beneficial in attaining a better yield level and concomitant with that a favourable pricing system can provide good returns to the farmers so that they get appropriate remuneration for their investment in farm business.

Table 1: Trend of Actual Rainfall (mm) in the past 20 years (1983 to 2002)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Arunachal Pradesh	3754.5	4767.6	3903.5	3667.0	5985.3	7417.9	4599.5	4334.0	3309.2	1719.0	3364.0	2657.0	2955.0	4962.7	2742.6
Assam	2569.4	2515.4	2374.0	2258.6	2729.9	2829.9	2489.8	2365.7	2206.1	2174.0	3021.0	2365.0	2612.0	2310.4	2432.5
Meghalaya	2569.4	2515.4	2374.0	2258.6	2729.9	2829.9	2489.8	2365.7	2206.1	2174.0	3021.0	2365.0	2612.0	2310.4	2432.5
Nagaland,	2188.7	1910.0	1869.8	2003.8	1818.1	2323.3	2025.9	2026.3	2513.4	1447.0	2195.0	1363.0	1622.0	1947.0	1830.9
Mizoram	2188.7	1910.0	1869.8	2003.8	1818.1	2323.3	2025.9	2026.3	2513.4	1447.0	2195.0	1363.0	1622.0	1947.0	1830.9
Manipur	2188.7	1910.0	1869.8	2003.8	1818.1	2323.3	2025.9	2026.3	2513.4	1447.0	2195.0	1363.0	1622.0	1947.0	1830.9
Tripura	2188.7	1910.0	1869.8	2003.8	1818.1	2323.3	2025.9	2026.3	2513.4	1447.0	2195.0	1363.0	1622.0	1947.0	1830.9
West Bengal	1913.9	2017.0	1833.9	1779.5	2106.9	2116.0	2011.4	1794.6	2249.1	1476.5	1928.1	1539.4	2025.6	1792.4	1837.8
Sikkim	2934.7	3123.5	2788.4	2700.0	3350.7	3043.7	2873.9	2772.4	3105.6	2121.0	2764.0	1801.0	2912.0	2920.5	2350.9
Orissa	1749.8	1388.1	1654.4	1459.0	1103.3	1322.6	1422.6	1456.3	1583.6	1299.0	1400.0	1775.0	1724.0	996.9	1556.8
Bihar	1112.3	1508.6	1371.6	1260.1	1669.4	1269.1	1209.2	1222.1	1157.1	772.9	1045.9	1015.4	1160.4	1260.3	1388.3
UP	1349.8	1166.4	1314.4	1176.2	812.4	1154.7	1016.4	1108.6	776.5	924.0	986.3	1008.2	984.5	1199.0	1092.7
Haryana	1060.7	579.2	716.8	641.4	375.6	1205.5	544.2	722.9	586.4	534.0	661.0	749.0	1060.0	953.1	875.5
Punjab	797.7	726.2	660.4	586.6	383.3	1355.9	707.4	768.5	662.1	564.0	693.0	673.0	868.0	820.2	896.7
Himachal Pradesh	1590.3	1172.1	1722.2	1865.9	1262.6	2318.1	1364.7	1664.2	1319.9	1338.0	1184.0	1418.0	1459.0	1604.3	1385.1
J & K	1251.2	871.7	976.7	1084.1	1123.8	1417.7	1137.2	1179.1	1132.3	1267.0	849.0	1098.0	897.0	1666.8	1045.4
Rajasthan	666.1	397.9	420.9	505.7	275.6	470.1	399.0	501.5	302.6	594.4	516.2	661.2	621.6	635.8	667.8
MP	1236.6	1009.4	1194.2	1155.0	962.6	1012.3	864.1	1133.8	950.4	932.4	1122.8	1473.5	1019.4	1025.7	1165.8
Gujarat	974.7	607.0	426.1	734.1	225.3	912.8	616.5	673.4	411.7	881.9	820.2	1325.7	627.7	657.2	1014.5
Goa	3807.3	2403.2	3102.2	2737.1	2858.9	3027.6	2682.3	2760.2	2682.5	2718.0	3229.0	3069.0	2699.0	2582.4	2930.0
Maharashtra	1310.5	706.6	782.9	1060.5	798.2	1053.0	823.8	1069.7	818.0	921.0	1034.3	1162.9	949.0	800.4	1022.2
AP	1248.8	680.8	772.0	901.1	1006.3	1106.1	1025.0	905.6	660.7	826.5	867.2	888.1	1136.0	1149.0	918.8
Tamil Nadu	1083.2	1113.7	1169.6	1020.9	935.7	883.3	867.8	1000.6	968.9	952.0	1177.0	951.0	866.0	1343.1	1205.1
Karnataka	1208.4	916.3	795.3	1046.3	1048.4	1274.5	1147.2	1159.6	1286.0	1310.7	1248.6	1364.3	1180.3	1054.2	1332.4
Kerala	2214.7	2349.5	2460.8	2824.1	2237.8	2483.8	2411.4	2718.6	2836.6	3364.0	2918.0	3427.0	2940.0	2457.2	3213.9

contd.

	1998	1999	2000	2001	2002	Average	S.D	C.V (%)
Arunachal Pradesh	3794.0	2739.1	2755.1	2199.9	199.9	473.4	138.8	29.33
Assam	2992.6	2599.0	2687.4	2260.1	446.1	709.8	203.7	28.71
Meghalaya	2992.6	2599.0	2687.4	2260.1	471.8	712.2	226.7	31.83
Nagaland,	1827.7	1874.3	1991.6	1962.9	546.0	720.2	254.5	35.33
Mizoram	1827.7	1874.3	1991.6	1962.9	686.5	931.2	169.3	18.18
Manipur	1827.7	1874.3	1991.6	1962.9	723.4	986.9	159.3	16.14
Tripura	1827.7	1874.3	1991.6	1962.9	750.5	1054.6	234.3	22.22
West Bengal	1983.4	2102.3	1826.1	1745.6	828.4	953.0	151.0	15.84
Sikkim	3247.5	2897.1	2559.3	2620.0	852.6	1046.7	169.5	16.19
Orissa	1306.2	1527.6	1163.7	1777.5	912.0	1069.5	152.2	14.2
Bihar	1359.5	1523.8	1319.0	1366.0	939.1	1164.6	162.5	13.95
UP	1233.9	1052.9	1126.2	994.6	1075.5	1421.0	307.6	21.65
Haryana	888.0	463.7	538.1	616.1	1166.6	1441.7	230.4	15.98
Punjab	837.4	571.1	543.8	634.2	1227.0	1260.9	197.7	15.7
Himachal Pradesh	1349.2	1109.9	1114.6	1102.5	1898.6	1898.9	190.0	10.01
J & K	973.7	762.9	812.6	795.4	1960.8	1935.1	266.7	13.78
Rajasthan	503.8	369.2	341.7	416.9	1960.8	1935.1	266.7	13.78
MP	941.8	1206.7	699.7	974.9	1960.8	1935.1	266.7	13.78
Gujarat	1034.9	616.7	539.8	757.3	1960.8	1935.1	266.7	13.78
Goa	3251.7	2894.1	3134.5	2373.8	2324.2	2863.4	351.1	12.26
Maharashtra	1106.8	969.3	931.6	910.8	2457.3	2734.2	364.7	13.34
AP	1133.2	777.0	1000.6	934.3	2530.4	2516.2	244.4	9.71
Tamil Nadu	1034.7	784.2	873.1	785.4	2530.4	2516.2	244.4	9.71
Karnataka	1390.9	1281.8	1259.1	1049.5	2559.6	3709.3	1360.3	36.67
Kerala	3116.3	2872.3	2470.3	2910.6	2820.1	2785.3	368.5	13.23

Source: Statistical Abstract of India (various issues)

Table 2: Twenty years (1983-84 to 2002-3) average of Actual Rainfall (mm) in different states

STATES	RAINFALL (mm)
Rajasthan	473.39
Punjab	709.78
Haryana	712.15
Gujarat	720.17
AP	931.18
Maharashtra	953.01
Tamil Nadu	986.94
Madhya Pradesh	1046.68
Jammu & Kashmir	1054.61
Uttar Pradesh	1069.49
Karnataka	1164.63
Bihar	1260.90
Himachal Pradesh	1421.01
Orissa	1441.65
West Bengal	1898.90
Manipur	1935.08
Mizoram	1935.08
Nagaland	1935.08
Tripura	1935.08
Assam	2516.16
Meghalaya	2516.16
Kerala	2734.21
Sikkim	2785.32
Arunachal Pradesh	3709.33

Source: Calculated from Table 1

Table 3: Trend in the Area under Food Grains (000' hectares) in the Moisture Deficient States in the past 20 years (1983-84 to 2002-03)

	Andhra Pradesh	Bihar	Gujarat	Haryana	Himachal Pradesh	Jammu & Kashmir	Karnataka	Madhya Pradesh	Maharashtra	Orissa	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	All India
1983-84	9220	9193	5514	4195	878	860	7537	18371	13660	7323	5206	13241	4679	20689	122181
1984-85	8057	9275	5391	3989	893	872	7401	17770	13702	6652	5355	11677	4629	20665	121850
1985-86	7828	9410	5039	4043	873	862	7225	18303	14049	7043	5394	12883	4358	20841	128756
1986-87	7705	9415	4831	4140	879	877	7862	17618	13708	7011	5527	12779	4133	20759	127992
1987-88	7568	9332	3956	3186	869	884	7599	17755	13708	6728	5295	9051	3996	19752	120465
1988-89	8025	9509	4927	4212	882	860	7294	17437	13708	6857	5423	12780	3743	20499	126919
1989-90	8048	9414	4927	3939	866	886	7556	16878	13708	6960	5562	11659	4024	20564	125937
1990-91	7762	9428	4726	4079	872	894	7036	17889	13708	7089	5674	12655	3885	20472	127284
1991-92	7431	9069	3913	3585	858	905	7190	16859	13058	7252	5646	11288	4007	19898	121871
1992-93	7001	8361	4312	3967	843	887	7351	17247	13896	5541	5691	12837	3945	20387	123148
1993-94	6871	8711	3992	3895	850	889	6984	17721	14188	5772	5862	11629	4027	20273	122754
1994-95	6879	8970	4202	4027	856	884	7039	17862	13531	5607	5921	12926	3853	20291	123712
1995-96	6893	8993	3752	3993	850	881	6856	17511	13275	5662	5706	11902	3339	20342	121015
1996-97	7287	9049	3997	4027	825	891	7318	17666	13802	5351	5693	12851	3558	20302	123581
1997-98	6521	8969	4077	4180	853	895	7060	17857	13177	5482	5879	13751	3642	20501	123847
1998-99	7370	8966	3904	4490	843	881	7416	17878	13094	5368	6124	13481	3676	20779	125167
1999-00	7138	8898	3416	4287	823	881	7666	17604	13637	5488	6256	10953	3828	20862	123104
2000-01	7673	8953	3070	4345	814	911	7782	15702	13383	5245	6281	11373	3501	30303	121048
2001-02	7056	8910	3814	4253	817	900	7116	16959	12798	6683	6159	12743	3452	21488	124385
2002-03	6289	8947	3769	3974	810	881	6963	16376	12845	5992	6137	8628	2792	20774	116105

Source: Indian Agricultural Statistics (various issues)

Table 4: Trend in the Production of Food Grains (000' tones) in the Moisture Deficient States in the past 20 years (1983-84 to 2002-03)

	Andhra Pradesh	Bihar	Gujarat	Haryana	Himachal Pradesh	Jammu & Kashmir	Karnataka	Madhya Pradesh	Maharashtra	Orissa	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	All India
1983-84	11881	9875	5744	6886	1051	1113	7252	15704	10952	7016	14781	10076	6184	29182	152374
1984-85	9615	10328	5257	6838	1008	1245	6873	13295	9736	5619	16099	7914	6895	29889	145539
1985-86	10374	10956	2736	8141	1201	1404	5802	15293	8779	6883	17189	7933	7174	31424	150440
1986-87	9163	10910	3096	8141	1113	1373	7625	13522	7144	6388	16292	6791	7156	30249	143418
1987-88	9691	9075	2869	6302	812	966	6353	14138	11064	5047	17065	4833	7469.87	28096	138414
1988-89	9433	9163	2659	8184	793	966	6516	14183	11526	4940	17664	4711	7798	28319	138304
1989-90	9182	9252	2464	10629	774	966	6683	14229	12008	4835	18284	4592	8140	28544	138195
1990-91	12330	12259	4844	9561	1434	1344	6399	17998	12184	6942	19249	10935	7438	35671	176390
1991-92	11705	10638	3394	9093	1340	1405	7927	15508	8366	8273	19635	7981	8245	35522	168373
1992-93	11658	9082	5410	10251	1403	1384	8499	16890	14045	5909	20007	11479	8358	36238	179483
1993-94	12254	12776	3778	10255	1229	1455	8659	19127	13582	7290	21577	7055	8258	37198	184260
1994-95	11784	12971	5247	10994	1407	1443	8107	19428	11525	6899	21817	11710	9088	39208	191495
1995-96	11667	12953	4103	10137	1362	1473	8646	18073	11604	6802	19806	9567	6405	38369	180415
1996-97	13675	14418	5209	11448	1289	1331	9213	19488	14602	4831	21553	12821	6930	42395	199436
1997-98	10822	14093	5710	11348	1441	1420	8047	17362	9664	6638	21143	14049	8104	41589	192259
1998-99	14905	13626	5567	12123	1491	1520	9997	19501	12753	5793	22907	12945	9419	40417	203607
1999-00	13696	14388	4052	13063	1444	1329	9859	21272	12701	5623	25201	10684	8969	45650	209802
2000-01	16029	16789	2539	13294	1112	1115	10986	13087	10135	4948	25325	10041	8617	44441	199536
2001-02	14836	13924	4906	13298	1600	1326	8697	19386	11188	7564	24887	14004	7732	45844	212851
2002-03	10654	12978	3566	12329	1123	1322	6665	14024	10834	3574	23491	7536	4442	39701	174771

Source: Same as Table 3

Table 5: Trend in the Food Grain Yield (kgs/hectare) in the Moisture Deficient States in the past 20 years (1983-84 to 2002-03)

	Andhra Pradesh	Bihar	Gujarat	Haryana	Himachal Pradesh	Jammu & Kashmir	Karnataka	Madhya Pradesh	Maharashtra	Orissa	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	All India
1983-84	1289	1074	1042	1641	1197	1294	962	855	802	958	2839	761	1322	1411	1247
1984-85	1193	1114	975	1714	1129	1428	929	748	711	845	3006	678	1490	1446	1194
1985-86	1325	1164	543	2014	1376	1629	803	836	625	977	3187	616	1646	1508	1168
1986-87	1189	1159	641	1966	1266	1566	970	768	521	911	2948	531	1731	1457	1121
1987-88	1281	972	725	1978	934	1093	836	796	807	750	3223	534	1869	1422	1149
1988-89	1175	964	540	1943	899	1123	893	813	841	720	3257	369	2083	1381	1090
1989-90	1141	983	500	2698	893	1091	884	843	876	695	3287	394	2023	1388	1097
1990-91	1589	1300	1025	2344	1644	1503	909	1006	889	979	3392	864	1915	1742	1386
1991-92	1575	1173	867	2536	1562	1552	1103	920	641	1141	3478	707	2058	1785	1382
1992-93	1665	1086	1255	2584	1664	1560	1156	979	1011	1066	3516	894	2119	1778	1457
1993-94	1783	1467	946	2633	1446	1637	1240	1079	957	1263	3681	607	2051	1835	1501
1994-95	1713	1446	1249	2730	1644	1632	1152	1088	852	1230	3685	906	2359	1932	1548
1995-96	1693	1440	1094	2539	1602	1672	1261	1032	874	1201	3471	804	1918	1886	1491
1996-97	1877	1593	1303	2843	1562	1495	1259	1103	1058	903	3786	998	1948	2088	1614
1997-98	1660	1571	1400	2715	1691	1587	1140	972	733	1211	3596	1022	2225	2029	1552
1998-99	2022	1520	1426	2700	1768	1725	1348	1091	974	1079	3741	960	2562	1945	1627
1999-00	1919	1617	1186	3047	1754	1508	1286	1208	931	1025	4028	975	2343	2188	1704
2000-01	2089	1875	827	3060	1366	1224	1412	833	757	943	4032	883	2461	1467	1648
2001-02	2103	1563	1286	3127	1959	1473	1222	1143	874	1132	4041	1099	2240	2134	1711
2002-03	1694	1451	946	3102	1387	1501	957	856	843	596	3828	873	1591	1911	1505

Source: Same as Table 3

Table 6: Trend in Area under Food Grains (000' hectares) in Moisture Surplus States in the past 20 years (1983-84 to 2002-03)

	Arunachal Pradesh	Assam	Kerala	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal
1983-84	176	2710	776	170	137	59	153	72	296	N.A
1984-85	176	2713	765	170	138	60	157	81	275	N.A
1985-86	176	2716	712	170	138	61	167	80	287	5902
1986-87	182	2563	699	173	139	56	164	81	267	6246
1987-88	182	2589	638	171	138	54	168	82	283	6307
1988-89	181	2560	612	173	138	57	171	87	291	6323
1989-90	187	2683	618	167	136	60	171	97	266	6374
1990-91	188	2729	590	162	133	62	181	98	290	6496
1991-92	190	2750	574	162	133	61	186	101	293	6313
1992-93	192	2734	569	163	133	60	191	103	297	6322
1993-94	193	2741	541	163	133	59	196	106	300	6531
1994-95	195	2668	534	164	133	58	201	109	304	6393
1995-96	183	2727	501	157	131	78	192	77	245	6573
1996-97	177	2729	454	173	132	78	202	77	273	6444
1997-98	183	2722	430	162	133	80	201	76	271	6556
1998-99	181	2667	389	170	134	82	212	76	266	6538
1999-00	187	2869	379	161	136	59	216	78	242	6849
2000-01	188	2859	365	168	135	61	230	76	254	6192
2001-02	188	2755	338	174	134	66	261	77	259	6807
2002-03	198	2749	322	164	134	69	248	72	267	6539

Source: Same as Table 3

Table 7: Trend in Production of Food Grains (000' tones) in the Moisture Surplus States in the past 20 years (1983-84 to 2002-03)

	Arunachal Pradesh	Assam	Kerala	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal
1983-84	162	2709	1232	268	161	31	110	76	387	N.A
1984-85	173	2670	1280	345	160	17	124	91	379	N.A
1985-86	189	3030	1202	347	167	13	118	96	374	9128
1986-87	187	2588	1157	259	131	53	93	99	390	9610
1987-88	187	2899	1061	323	131	54	99	110	442	10305
1988-89	192	2939	1029	335	131	69	105	115	447	10686
1989-90	197	2979	997	348	132	89	112	121	452	11082
1990-91	202	3442	1111	362	132	115	119	127	456	11270
1991-92	207	3379	1083	375	132	148	127	133	461	12856
1992-93	213	3447	1110	390	133	191	135	139	466	12389
1993-94	218	3535	1044	405	133	245	144	146	471	13101
1994-95	224	3489	1000	420	133	316	153	153	476	13279
1995-96	230	3561	974	437	134	406	163	160	481	12885
1996-97	206	3532	852	391	178	134	212	106	556	13756
1997-98	210	3578	798	365	187	134	237	103	547	14353
1998-99	188	3434	755	392	188	135	282	91	499	14367
1999-00	210	4042	793	376	209	106	211	103	514	14916
2000-01	215	4167	765	396	216	124	323	103	523	13815
2001-02	217	4023	719	401	225	126	355	99	598	16501
2002-03	242	3894	700	344	227	129	388	97	612	15522

Source: Same as Table 3

Table 8: Trend in Food Grain Yield (kgs/hectare) in the Moisture Surplus States in the past 20 years (1983-84 to 2002-03)

	Arunachal Pradesh	Assam	Kerala	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	West Bengal
1983-84	920.46	999.70	1587.63	1579.91	1171.11	522.82	719.76	1055.56	1307.43	N.A
1984-85	982.95	984.19	1673.20	2031.62	1161.63	282.67	789.81	1123.46	1378.18	N.A
1985-86	1073.86	1115.61	1688.20	2041.18	1210.14	218.39	706.59	1200.00	1303.14	1546.59
1986-87	1027.47	1009.75	1655.22	1497.11	942.45	946.43	567.07	1222.22	1460.67	1538.58
1987-88	1027.47	1119.74	1663.01	1888.89	949.28	1000.00	589.29	1341.46	1561.84	1633.90
1988-89	1059.99	1147.86	1680.73	1938.67	951.79	1219.12	616.38	1325.46	1535.20	1690.09
1989-90	1052.62	1110.17	1613.59	2085.37	968.35	1490.39	656.23	1246.26	1697.51	1738.63
1990-91	1074.22	1261.27	1883.05	2232.20	992.82	1856.05	660.06	1293.15	1573.73	1734.91
1991-92	1091.92	1228.73	1886.76	2310.95	996.15	2430.98	684.20	1320.23	1572.11	2036.43
1992-93	1109.91	1260.79	1950.79	2392.49	999.49	3184.00	709.21	1347.89	1570.49	1959.66
1993-94	1128.20	1289.68	1929.76	2476.90	1002.84	4170.28	735.14	1376.12	1568.87	2005.97
1994-95	1146.79	1307.72	1872.66	2564.28	1006.21	5462.07	762.01	1404.94	1567.25	2077.12
1995-96	1253.85	1305.97	1944.11	2780.30	1019.08	5199.64	849.39	2081.10	1968.92	1960.35
1996-97	1165.35	1294.43	1877.07	2264.93	1348.71	1726.45	1052.55	1374.03	2039.24	2134.81
1997-98	1144.57	1314.28	1855.32	2258.82	1405.12	1660.45	1179.78	1353.02	2016.95	2189.19
1998-99	1040.42	1287.64	1941.09	2309.01	1398.36	1638.35	1331.44	1193.42	1874.62	2197.56
1999-00	1124.67	1408.85	2093.69	2327.76	1531.18	1780.78	976.80	1316.73	2119.27	2177.71
2000-01	1147.65	1457.38	2094.42	2358.76	1597.63	2036.12	1406.10	1356.11	2060.26	2230.96
2001-02	1154.28	1460.11	2126.51	2298.42	1682.83	1915.29	1364.30	1288.51	2311.41	2424.12
2002-03	1225.84	1416.52	2170.98	2090.12	1700.98	1865.01	1564.52	1334.25	2288.81	2373.95

Source: Same as Table 3

Table 9: Instability of Area, Production and Yield of Food Grains derived on the basis of Cuddy Della Valle's Index of Instability

STATES	Instability in Area under Food Grains	Instability in Food Grain Production	Instability in Food Grain Yield
Andhra Pradesh	5.95	12.58	9.47
Arunachal Pradesh	2.95	6.01	4.56
Assam	2.41	5.07	3.62
Bihar	2.53	11.03	10.77
Gujarat	7.91	28.18	24.31
Haryana	6.43	7.46	6.42
Himachal Pradesh	1.07	16.42	16.14
Jammu & Kashmir	1.25	12.63	12.76
Karnataka	3.79	13.10	11.56
Kerala	3.08	6.01	3.80
Madhya Pradesh	3.08	13.63	11.39
Maharashtra	2.21	15.93	14.56
Manipur	2.81	9.58	11.09
Meghalaya	1.42	15.55	14.79
Mizoram	11.38	66.40	65.67
Nagaland	4.66	23.70	18.53
Orissa	8.40	18.80	18.92
Punjab	1.97	4.49	3.31
Rajasthan	11.02	26.65	19.12
Sikkim	13.90	20.08	14.05
Tamil Nadu	5.83	14.90	12.52
Tripura	5.66	5.01	6.61
Uttar Pradesh	9.91	6.73	10.24
West Bengal	2.53	4.28	3.52

Source: Instability in area under food grains calculated from values given in table 3 & table 6. Instability in production of food grain calculated from values given in table 4 & table 7. Instability in food grain yield calculated from values given in table 5 & table 8.

Table 10: Trend in Gross Cropped Area (000' hectares) in the past 20 years (1983-84 to 2002-03) in different states

	Meghalaya	Mizoram	Nagaland	Orissa	Punjab	Rajasthan	Sikkim	Tamil Nadu	Tripura	Uttar Pradesh	West Bengal	INDIA
1983-84	232	63	195	9340	6977	18878	113	6945	426	25067	7842	175328
1984-85	236	67	191	8774	7013	17286	125	7088	416	25121	8002	163811
1985-86	241	70	186	9259	7158	18137	134	6819	423	25290	7987	178464
1986-87	235	65	191	9270	7217	17640	124	6508	408	25198	8211	176405
1987-88	240	65	192	9092	7326	13308	126	6729	427	24428	8413	170120
1988-89	242	68	198	9169	7398	18839	133	6451	445	25252	8351	181116
1989-90	241	73	201	9325	7394	17903	146	6822	421	25346	8436	180758
1990-91	240	77	210	9594	7502	19380	148	6632	444	25480	8662	184266
1991-92	240	96	215	9814	7518	18093	130	6977	450	25282	8666	182242
1992-93	239	102	228	9416	7552	20167	125	7067	440	25673	8540	185618
1993-94	239	107	217	9747	7623	19254	127	7158	460	25545	8680	186595
1994-95	238	112	221	9724	7693	20380	127	7026	459	25738	8718	188147
1995-96	247	109	228	9668	7752	19672	141	6268	429	25793	8973	187471
1996-97	260	109	246	8216	7855	20693	141	6457	459	26129	9059	189592
1997-98	251	113	260	8645	7833	22325	140	6558	451	26045	9259	190570
1998-99	266	116	286	8425	8117	21401	127	6627	444	26609	9290	192619
1999-00	276	80	317	8524	7847	19286	114	6519	330	26378	9545	189436
2000-01	277	82	336	7878	7941	19230	117	6338	343	26530	9117	185705
2001-02	278	91	378	8799	7941	20798	124	6226	341	27164	9779	190244
2002-03	285	92	370	7853	7810	13218	119	5191	351	26543	9454	176719
AVERAGE	249	90	240	8993	7495	18775	128	6592	419	25516	8789	181785

Source: Same as Table 3

Table 11: Trend in Net Irrigated Area (000' hectares) in the past 20 years (1983-84 to 2002-03) in different states

YEARS	Andhra Pradesh	Arunachal Pradesh	Assam	Bihar	Gujarat	Haryana	Himachal Pradesh	Jammu & Kashmir	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Manipur
1983-84	3878	22	567	2517	2271	2190	94	321	1590	266	2772	1902	48
1984-85	3522	22	570	2795	2324	2198	95	309	1486	271	3010	1957	56
1985-86	3538	25	572	2808	2039	2236	96	310	1675	296	2987	1948	65
1986-87	3550	27	572	2957	1961	2349	96	307	1816	299	3346	2036	65
1987-88	3369	28	572	3194	1758	2579	98	307	1853	306	3331	2036	65
1988-89	4258	32	572	3524	2493	2532	100	310	2092	317	3667	2036	65
1989-90	4285	31	572	3124	2493	2657	99	306	2094	330	3632	2036	65
1990-91	4306	31	572	3347	2464	2599	100	298	2113	333	4314	2036	65
1991-92	4351	31	572	3354	2371	2666	100	313	2308	333	4627	2726	65
1992-93	4029	36	572	3344	2642	2628	99	311	2194	335	4775	2680	65
1993-94	3890	36	572	3453	2540	2663	100	312	2327	324	5346	2567	65
1994-95	3959	36	572	3535	3002	2719	100	305	2325	358	5822	2567	65
1995-96	4123	36	572	3680	2892	2761	105	386	2302	342	5928	2567	65
1996-97	4395	36	572	3624	3042	2755	105	313	2325	357	6309	2567	65
1997-98	3945	36	572	3508	3058	2793	103	309	2363	350	6304	2936	65
1998-99	4538	36	572	3682	3058	2842	103	309	2492	375	6560	2946	65
1999-00	4384	42	170	3625	2979	2888	102	303	2548	380	6740	3296	38
2000-01	4528	42	174	3593	2806	2958	126	311	2643	381	5119	2959	45
2001-02	4238	42	172	3626	2994	2938	102	310	2565	377	5886	2975	40
2002-03	3614	42	172	3626	3046	2966	124	300	2450	379	5562	2971	54
AVERAGE	4010	33	483	3273	2593	2632	101	312	2154	331	4547	2460	60

contd.

YEARS	Meghalaya	Mizoram	Nagaland	Orissa	Punjab	Rajasthan	Sikkim	Tamil Nadu	Tripura	Uttar Pradesh	West Bengal	INDIA
1983-84	45	4	68	1859	3609	3276	12	2618	41	9879	1980	41242
1984-85	47	6	50	1466	3621	3204	16	2640	40	10154	1911	39256
1985-86	49	8	51	1466	3691	3110	16	2501	42	10132	1911	41865
1986-87	48	8	53	1673	3717	3421	16	2356	44	9854	1911	42569
1987-88	48	8	54	1673	3774	3327	16	2438	45	10043	1911	42921
1988-89	48	8	56	1830	3777	3481	16	2375	41	10170	1911	45794
1989-90	47	8	58	1830	3919	3635	16	2497	41	10332	1911	46095
1990-91	46	8	59	1934	3910	3904	16	2373	41	10542	1911	47406
1991-92	45	8	59	1934	3940	4343	16	2605	50	11048	1911	49867
1992-93	45	8	62	2070	3861	4471	16	2698	35	11322	1991	50296
1993-94	45	8	61	2090	3927	4597	16	2799	35	11564	1911	51339
1994-95	45	8	62	2090	3944	4858	16	2902	35	11670	1911	52999
1995-96	45	7	62	2090	3847	5232	16	2625	35	11675	1911	53402
1996-97	48	7	62	2090	3847	5588	16	2892	35	11999	1911	55049
1997-98	47	8	62	2090	4004	5421	16	2945	35	12012	1911	54985
1998-99	48	9	63	2090	4004	5499	16	3019	35	12691	1911	57053
1999-00	52	8	63	1390	3578	5612	9	2972	40	12816	2980	57108
2000-01	54	9	64	1334	4038	4907	9	2888	40	12745	2980	54836
2001-02	59	16	65	1334	4056	5402	9	2801	40	12737	2980	55866
2002-03	59	16	65	1300	4046	4372	9	2310	40	12573	2980	53148
AVERAGE	49	9	60	1785	3674	4328	14	2643	39	11129	2144	48949

Source: Same as Table 3

Table 12: Trend in Gross Irrigated Area (000' hectares) in the past 20 years (1983-84 to 2002-03) in different states

YEARS	Andhra Pradesh	Arunachal Pradesh	Assam	Bihar	Gujarat	Haryana	Himachal Pradesh	Jammu & Kashmir	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Manipur
1983-84	5058	23	589	3570	2797	3595	165	413	1945	396	2868	2387	75
1984-85	4470	23	581	3784	2710	3504	169	417	1792	423	3106	2444	75
1985-86	4337	25	572	3819	2381	3679	170	423	2012	399	3089	2420	75
1986-87	4360	27	572	3831	2301	3912	171	405	2247	426	3457	2489	75
1987-88	4298	28	572	4054	2100	3883	173	417	2296	393	3437	2489	75
1988-89	5440	32	572	4242	2904	4074	171	432	2607	406	3785	2489	75
1989-90	5454	32	572	4123	2904	4253	176	434	2580	397	3739	2489	75
1990-91	5370	32	572	4192	2906	4237	167	436	2598	383	4431	2489	75
1991-92	5378	32	572	4157	2880	4340	175	445	2834	387	4757	3265	75
1992-93	5085	36	572	4040	3227	4472	174	437	2802	376	4918	3262	75
1993-94	5020	36	572	4212	3087	4515	171	444	2971	413	5529	3149	75
1994-95	5185	37	572	4403	3655	4592	171	430	2923	506	6071	3149	75
1995-96	5304	36	572	4581	3499	4673	176	440	2845	466	6178	3149	75
1996-97	5782	36	572	4664	3643	4785	176	447	2881	466	6557	3149	75
1997-98	5158	36	572	4579	3779	4829	180	446	2912	417	6527	3352	75
1998-99	6092	36	572	4752	3779	5042	183	447	3118	421	6814	3422	75
1999-00	5746	43	225	4808	3626	5124	179	438	3162	471	7091	3873	38
2000-01	5916	43	224	4780	3342	5223	181	449	3271	458	6371	3681	45
2001-02	5549	43	215	4762	3572	5311	181	449	3089	432	7353	3894	40
2002-03	4536	43	215	4789	3637	5199	187	434	2841	429	5775	4005	54
AVERAGE	5146	33	494	4230	3112	4419	174	433	2658	419	4710	3021	68

contd.

YEARS	Meghalaya	Mizoram	Nagaland	Orissa	Punjab	Rajasthan	Sikkim	Tamil Nadu	Tripura	Uttar Pradesh	West Bengal	INDIA
1983-84	42	6	73	2208	6273	4014	12	3249	41	12148	1980	53309
1984-85	46	7	54	2054	6347	3830	16	3507	40	12731	1911	51520
1985-86	50	8	58	2159	6515	3863	16	3240	42	12908	1911	41865
1986-87	49	8	55	2088	6590	4351	16	2844	44	13411	1911	42569
1987-88	49	8	56	2063	6721	3995	16	2945	45	13921	1911	42921
1988-89	49	8	57	2350	6837	4365	16	2873	41	14113	2492	45794
1989-90	47	8	59	2350	6918	4461	16	3045	41	14375	2492	46095
1990-91	47	8	60	2314	7055	4652	16	2894	41	14771	2492	62362
1991-92	45	8	60	2530	7111	5264	16	3257	50	15426	2492	65680
1992-93	45	8	62	2471	7142	5486	16	3385	60	15996	2491	66761
1993-94	45	8	63	2510	7238	5595	16	3544	60	16364	2491	68254
1994-95	45	8	65	2510	7319	5815	16	3588	60	16823	2491	70639
1995-96	45	9	72	2629	7377	6361	16	3183	60	16972	2491	71352
1996-97	53	9	73	2263	7377	6743	16	3347	60	17467	2491	73246
1997-98	54	10	70	2318	7487	6676	16	3519	60	17322	2491	73007
1998-99	55	10	73	2358	7487	6809	16	3635	60	17676	2491	75546
1999-00	60	11	76	2512	7544	6934	16	3585	50	18127	4947	78813
2000-01	62	13	77	2126	7664	6135	15	3490	52	18227	4947	75870
2001-02	76	17	80	2546	7667	6744	16	3412	51	18601	4947	77940
2002-03	76	17	81	1712	7540	5272	15	2622	53	18374	4947	72966
AVERAGE	53	10	67	2283	7065	5307	16	3233	50	15421	2890	62189

Source: Same as Table 3

Table 13: Trend in Area under Tube Well Irrigation (000' hectares) in the past 20 years (1983-84 to 2002-03) in different states

YEARS	Andhra Pradesh	Arunachal Pradesh	Assam	Bihar	Gujarat	Haryana	Himachal Pradesh	Jammu & Kashmir	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Manipur
1983-84	170	N.A	N.A	814	305	990	4	2	5	31	47	N.A	N.A
1984-85	185	N.A	N.A	927	321	972	3	3	2	34	62	N.A	N.A
1985-86	184	N.A	N.A	933	358	1038	4	2	42	38	84	N.A	N.A
1986-87	193	N.A	N.A	934	381	1126	4	2	75	45	119	N.A	N.A
1987-88	230	N.A	N.A	1086	389	1354	7	2	100	49	142	N.A	N.A
1988-89	240	N.A	N.A	1349	448	1286	8	2	135	57	203	N.A	N.A
1989-90	253	N.A	N.A	1254	448	1293	4	2	153	64	249	N.A	N.A
1990-91	282	N.A	N.A	1388	481	1143	4	1	174	66	348	N.A	N.A
1991-92	336	N.A	N.A	1364	531	1256	4	1	216	65	406	N.A	N.A
1992-93	384	N.A	N.A	1621	552	1237	6	1	243	66	482	N.A	N.A
1993-94	526	N.A	N.A	1625	559	1267	4	1	291	66	634	N.A	N.A
1994-95	598	N.A	N.A	1653	724	1304	10	1	358	76	796	N.A	N.A
1995-96	709	N.A	N.A	1728	698	1353	10	1	372	73	874	N.A	N.A
1996-97	741	N.A	N.A	1700	726	1343	10	1	367	83	1058	N.A	N.A
1997-98	773	N.A	N.A	1751	810	1363	9	1	411	83	1079	N.A	N.A
1998-99	916	N.A	N.A	1843	888	1395	8	1	450	107	1215	N.A	N.A
1999-00	1000	N.A	2	2008	941	1432	10	1	482	122	1310	N.A	N.A
2000-01	1066	N.A	2	2126	967	1467	10	1	539	116	995	N.A	N.A
2001-02	1116	N.A	2	2238	998	1502	10	1	574	30	1159	N.A	N.A
2002-03	1153	N.A	2	2236	1000	1522	11	1	737	15	1268	N.A	N.A
AVERAGE	535			1489	611	1272	7	1	274	63	579		

contd.

YEARS	Meghalaya	Mizoram	Nagaland	Orissa	Punjab	Rajasthan	Sikkim	Tamil Nadu	Tripura	Uttar Pradesh	West Bengal	INDIA
1983-84	N.A	N.A	N.A	2077	140	N.A	105	5	5467	687	10894	10894
1984-85	N.A	N.A	N.A	2164	207	N.A	103	5	5740	688	10861	10861
1985-86	N.A	N.A	N.A	2229	170	N.A	942	5	5768	689	11903	11903
1986-87	N.A	N.A	N.A	2263	264	N.A	890	6	5795	689	12298	12298
1987-88	N.A	N.A	N.A	2287	363	N.A	966	6	6080	689	13185	13185
1988-89	N.A	N.A	N.A	2306	331	N.A	912	7	6207	689	13716	13716
1989-90	N.A	N.A	N.A	2422	361	N.A	996	7	6280	689	13944	13944
1990-91	N.A	N.A	N.A	2217	372	N.A	170	7	6563	689	14244	14244
1991-92	N.A	N.A	N.A	2408	436	N.A	176	11	6928	689	15168	15168
1992-93	N.A	N.A	N.A	2387	469	N.A	174	2	7140	686	15814	15814
1993-94	N.A	N.A	N.A	2285	551	N.A	178	2	7333	689	16376	16376
1994-95	N.A	N.A	N.A	2321	602	N.A	185	2	7504	689	17190	17190
1995-96	N.A	N.A	N.A	2356	703	N.A	200	2	7771	689	17910	17910
1996-97	N.A	N.A	N.A	2356	779	N.A	215	2	7992	689	18433	18433
1997-98	N.A	N.A	N.A	2695	703	N.A	209	2	7980	689	18905	18905
1998-99	N.A	N.A	N.A	2695	826	N.A	224	2	8797	689	20404	20404
1999-00	N.A	N.A	78	2870	947	N.A	222	2	8893	1664	22030	22030
2000-01	N.A	N.A	75	3074	1019	N.A	228	2	9134	1664	22539	22539
2001-02	N.A	N.A	75	3084	1163	N.A	237	2	9128	1664	23030	23030
2002-03	N.A	N.A	73	3076	1345	N.A	243	2	9017	1664	23404	23404
AVERAGE			220	2362	568	N.A	368	5	7075	894	16208	16208

Source: Same as Table 3

**Table 14: Twenty years (1983-84 to 2002-03)
average of GCA, NIA, GIA & TWI (000' hectares)**

STATES	GCA	NIA	GIA	TWI
Andhra Pradesh	12783	4011	5146	535
Arunachal Pradesh	233	33	33	0
Assam	3878	483	494	0
Bihar	9813	3273	4230	1489
Gujarat	10608	2594	3112	611
Haryana	5821	2632	4419	1272
Himachal Pradesh	971	102	174	7
Jammu & Kashmir	1062	313	433	1
Karnataka	11920	2155	2658	274
Kerala	2969	332	419	63
Madhya Pradesh	23061	4547	4710	579
Maharashtra	20985	2460	3021	0
Manipur	206	60	68	0
Meghalaya	249	49	53	0
Mizoram	90	9	10	0
Nagaland	240	60	67	0
Orissa	8993	1785	2283	220
Punjab	7495	3674	7065	2362
Rajasthan	18775	4328	5307	568
Sikkim	128	14	16	0
Tamil Nadu	6592	2643	3233	368
Tripura	419	39	50	5
Uttar Pradesh	25516	11129	15421	7075
West Bengal	8789	2144	2890	894
INDIA	181785	48949	62189	16208

Source: GCA, NIA, GIA & TWI calculated from table 10, 11, 12 & 13 respectively

**Table 15: GCA, NIA, GIA & TWI of 2002-03
(000' hectares)**

STATES	GCA	NIA	GIA	TWI
Andhra Pradesh	11559	3614	4536	1153
Arunachal Pradesh	255	42	43	0
Assam	3965	172	215	2
Bihar	10017	3626	4789	2236
Gujarat	10631	3046	3637	1000
Haryana	6032	2966	5199	1522
Himachal Pradesh	945	124	187	11
Jammu & Kashmir	1078	300	434	1
Karnataka	11532	2450	2841	737
Kerala	2970	379	429	15
Madhya Pradesh	23524	5562	5775	1268
Maharashtra	22387	2971	4005	0
Manipur	212	54	54	0
Meghalaya	285	59	76	0
Mizoram	92	16	17	0
Nagaland	370	65	81	0
Orissa	7853	1300	1712	73
Punjab	7810	4046	7540	3076
Rajasthan	13218	4372	5272	1345
Sikkim	119	9	15	0
Tamil Nadu	5191	2310	2622	243
Tripura	351	40	53	2
Uttar Pradesh	26543	12573	18374	9017
West Bengal	9454	2980	4947	1664
INDIA	176719	53148	72966	23404

Source: Same as Table 3

Table 16: Proportionate values (%) of extent of irrigation, Irrigation intensity and area under tube well irrigation (On the basis of average values mentioned in Table 14)

STATES	Extent of Irrigation	Irrigation Intensity	Tube Well Irrigation (%)
Andhra Pradesh	40.25	128.29	13.33
Arunachal Pradesh	14.34	101.44	0.00
Assam	12.73	102.20	0.00
Bihar	43.11	129.22	45.48
Gujarat	29.33	119.95	23.54
Haryana	75.92	167.90	48.35
Himachal Pradesh	17.92	170.79	6.77
Jammu & Kashmir	40.77	138.37	0.46
Karnataka	22.30	123.36	12.70
Kerala	14.12	126.40	18.89
Madhya Pradesh	20.42	103.58	12.73
Maharashtra	14.40	122.78	0.00
Manipur	33.12	112.88	0.00
Meghalaya	21.24	108.28	0.00
Mizoram	10.82	110.00	0.00
Nagaland	27.76	110.67	0.00
Orissa	25.39	127.93	12.32
Punjab	94.26	192.31	64.28
Rajasthan	28.27	122.64	13.11
Sikkim	12.14	108.67	0.00
Tamil Nadu	49.05	122.32	13.90
Tripura	11.93	126.66	11.62
Uttar Pradesh	60.44	138.57	63.57
West Bengal	32.88	134.79	41.70
All India	34.21	127.05	33.11

Table 17: Proportionate values (%) of extent of irrigation, irrigation intensity & area under tube well irrigation (2002-03) (on the basis of values mentioned in Table 15)

STATES	Extent of Irrigation	Irrigation Intensity	Tube Well Irrigation (%)
Andhra Pradesh	39.24	125.51	31.90
Arunachal Pradesh	16.86	102.38	0.00
Assam	5.42	125.00	1.16
Bihar	47.81	132.07	61.67
Gujarat	34.21	119.40	32.83
Haryana	86.19	175.29	51.31
Himachal Pradesh	19.79	150.81	8.87
Jammu & Kashmir	40.26	144.67	0.33
Karnataka	24.64	115.96	30.08
Kerala	14.44	113.19	3.96
Madhya Pradesh	24.55	103.83	22.80
Maharashtra	17.89	134.80	0.00
Manipur	25.47	100.00	0.00
Meghalaya	26.67	128.81	0.00
Mizoram	18.48	106.25	0.00
Nagaland	21.89	124.62	0.00
Orissa	21.80	131.69	5.62
Punjab	96.54	186.36	76.03
Rajasthan	39.89	120.59	30.76
Sikkim	12.61	166.67	0.00
Tamil Nadu	50.51	113.51	10.52
Tripura	15.10	132.50	5.00
Uttar Pradesh	69.22	146.14	71.72
West Bengal	52.33	166.01	55.84
All India	41.29	137.29	44.04

Table 18: Level of Agricultural Development in India

WEIGHTAGES	0.47056	0.37379	0.4334	0.3781	0.05206	-0.08705	0.45302	0.30419		
STATES	Extent of Irrigation	Irrigation Intensity	Area under Tube Well Irrigation	Food Grain Yield	Villages Electrified (%)	Credit Societies per Farmer Household	Fertilizer Consumption per hectare	Road Length per 100 Square KM	Agricultural Development	DUMMY
Andhra Pradesh	39.24	125.51	31.90	1694	99.92	0.078	128.40	0.0431	0.2473	1
Arunachal Pradesh	16.86	102.38	0.00	1226	63.47	0.026	0.00	0.0676	-1.16313	0
Assam	5.42	125.00	1.16	1417	77.30	0.059	75.40	0.1626	-0.65483	0
Bihar	47.81	132.07	61.67	1374	71.34	0.100	87.10	0.1973	0.40456	1
Gujarat	34.21	119.40	32.83	1114	99.51	0.000	77.80	0.6295	0.11366	1
Haryana	86.19	175.29	51.31	3103	100.00	0.198	152.80	0.5883	1.99562	1
Himachal Pradesh	19.79	150.81	8.87	1381	99.38	0.120	41.50	0.2985	-0.29522	0
Jammu & Kashmir	40.26	144.67	0.33	1508	97.31	0.234	60.10	0.0442	-0.27519	0
Karnataka	24.64	115.96	30.08	949	98.91	0.000	90.90	0.5521	-0.06374	0
Kerala	14.44	113.19	3.96	2151	100.00	0.109	68.20	1.2283	0.07474	1
Madhya Pradesh	24.55	103.83	22.80	336	96.49	0.110	36.40	0.2297	-0.82966	0
Maharashtra	17.89	134.80	0.00	846	99.85	0.107	73.80	0.6435	-0.34298	0
Manipur	25.47	100.00	0.00	2217	95.51	0.311	0.00	0.1730	-0.84996	0
Meghalaya	26.67	128.81	0.00	1686	63.53	0.089	0.00	0.2786	-0.65031	0
Mizoram	18.48	106.25	0.00	1866	99.57	0.070	0.00	0.1301	-0.86901	0
Nagaland	21.89	124.62	0.00	1565	100.00	0.147	0.00	0.3890	-0.66297	0
Orissa	21.80	131.69	5.62	716	79.48	0.452	34.10	0.3290	-0.82796	0
Punjab	96.54	186.36	76.03	3828	100.00	0.065	175.00	1.0425	2.97375	1
Rajasthan	39.89	120.59	30.76	873	98.33	0.196	28.50	0.2635	-0.37728	0
Sikkim	12.61	166.67	0.00	1334	90.60	0.099	0.00	0.2134	-0.55871	0
Tamil Nadu	50.51	113.51	10.52	1612	100.00	0.000	114.00	0.9186	0.46499	1
Tripura	15.10	132.50	5.00	2289	95.91	0.118	0.00	0.4187	-0.42296	0
Uttar Pradesh	69.22	146.14	71.72	1898	60.97	0.165	126.50	0.5656	1.26729	1
West Bengal	52.33	166.01	55.84	2374	83.63	0.049	122.30	0.5456	1.302	1

Table 19: Area, Production & Yield of Food Grains in India

STATES	Gross Cropped Area (000' hectares)	OUTPUT (000' tonnes)	YIELD (kgs/hect)
Andhra Pradesh	6289	10654	1694
Arunachal Pradesh	198	242	1226
Assam	2749	3894	1417
Bihar	8947	12978	1374
Gujarat	3769	3566	1114
Haryana	3974	12329	3103
Himachal Pradesh	810	1123	1381
Jammu & Kashmir	881	1322	1508
Karnataka	6963	6665	949
Kerala	322	700	2151
Madhya Pradesh	16376	14024	336
Maharashtra	12845	10834	846
Manipur	164	344	2217
Meghalaya	134	227	1686
Mizoram	69	129	1866
Nagaland	248	388	1565
Orissa	5992	3574	716
Punjab	6137	23491	3828
Rajasthan	8628	7536	873
Sikkim	72	97	1334
Tamil Nadu	2792	4442	1612
Tripura	267	612	2289
Uttar Pradesh	20774	39701	1898
West Bengal	6539	15522	2374
INDIA	116105	174771	1505

Source: GCA taken from table 10 & output from table 4 & table 7

Table 20: Statewise Receipts, Expenses and Net Returns per hectare of GCA

STATES	RECEIPTS (Rs)	EXPENSES (Rs)	NET RETURNS (Rs)	GCA (hectares)	Net Returns/GCA (Rs/hect)
Andhra Pradesh	135877544400	89866477000	46011067400	9936840	4630.35
Arunachal Pradesh	3942243500	615859200	3326384300	284818	11678.98
Assam	102587686500	15357427000	87230259500	3291514	26501.56
Bihar	274584112600	100925141200	173658971400	11499045	15102.03
Gujarat	114698012600	55203027200	59494985400	9436007	6305.10
Haryana	90861474000	46347336000	44514138000	4592029	9693.78
Himachal Pradesh	24975027200	8816617600	16158409600	1267967	12743.56
Jammu & Kashmir	55765133600	11142259800	44622873800	1280855	34838.35
Karnataka	126722280300	59600059200	67122221100	9937677	6754.32
Kerala	87788247000	31721406500	56066840500	1769631	31682.79
Madhya Pradesh	255117651100	102830688200	152286962900	25707548	5923.82
Maharashtra	214989702900	100322014300	114667688600	15712529	7297.85
Manipur	4304447000	1312265600	2992181400	148627	20132.15
Meghalaya	21631547700	3998164800	17633382900	458254	38479.50
Mizoram	5464753500	162378000	5302375500	167691	31619.92
Nagaland	3305445000	338814400	2966630600	112144	26453.76
Orissa	33258139200	16641556400	16616582800	4873735	3409.41
Punjab	133812424800	52561975500	81250449300	4860410	16716.79
Rajasthan	72028552800	52973611200	19054941600	16678280	1142.50
Sikkim	1544540400	412124300	1132416100	53899	21009.96
Tamil Nadu	69551187000	40809099300	28742087700	4816731	5967.14
Tripura	5090392200	1576878800	3513513400	143435	24495.51
Uttar Pradesh	627037682600	282325957800	344711724800	25217432	13669.58
West Bengal	191859207000	97141696300	94717510700	5767232	16423.39
INDIA	2656797434900	1173002835600	1483794599300	158047647	9388.27

Source: NSSO, 59th Round, Report No. 497.

Table 21: Rural Infrastructure Index

WEIGHTAGES	0.556	-0.47	0.6846	
STATES	Villages Electrified (%)	Credit Societies per Farmer Household	Road Length per square kilometre	Rural Infrastructure Index
Andhra Pradesh	99.92	0.078	0.0431	-0.187
Arunachal Pradesh	63.47	0.026	0.0676	-1.213
Assam	77.30	0.059	0.1626	-0.683
Bihar	71.34	0.100	0.1973	-0.986
Gujarat	99.51	0.000	0.6295	1.1798
Haryana	100.00	0.198	0.5883	0.3539
Himachal Pradesh	99.38	0.120	0.2985	0.1011
Jammu & Kashmir	97.31	0.234	0.0442	-0.881
Karnataka	98.91	0.000	0.5521	1.0164
Kerala	100.00	0.109	1.2283	1.8767
Madhya Pradesh	96.49	0.110	0.2297	-0.088
Maharashtra	99.85	0.107	0.6435	0.8028
Manipur	95.51	0.311	0.1730	-1.005
Meghalaya	63.53	0.089	0.2786	-1.067
Mizoram	99.57	0.070	0.1301	-0.009
Nagaland	100.00	0.147	0.3890	0.1847
Orissa	79.48	0.452	0.3290	-1.824
Punjab	100.00	0.065	1.0425	1.7052
Rajasthan	98.33	0.196	0.2635	-0.294
Sikkim	90.60	0.099	0.2134	-0.281
Tamil Nadu	100.00	0.000	0.9186	1.729
Tripura	95.91	0.118	0.4187	0.209
Uttar Pradesh	60.97	0.165	0.5656	-0.922
West Bengal	83.63	0.049	0.5456	0.2813

Source: Villages electrified, credit societies, and road density taken from Statistical Abstract of India (2003)

Table 22: Fertilizer Consumption per hectare of GCA

STATES	Fertilizer Consumption per hectare
Andhra Pradesh	128.40
Arunachal Pradesh	0.00
Assam	75.40
Bihar	87.10
Gujarat	77.80
Haryana	152.80
Himachal Pradesh	41.50
Jammu & Kashmir	60.10
Karnataka	90.90
Kerala	68.20
Madhya Pradesh	36.40
Maharashtra	73.80
Manipur	0.00
Meghalaya	0.00
Mizoram	0.00
Nagaland	0.00
Orissa	34.10
Punjab	175.00
Rajasthan	28.50
Sikkim	0.00
Tamil Nadu	114.00
Tripura	0.00
Uttar Pradesh	126.50
West Bengal	122.30

Source: Fertilizer Statistics of India

Table 23: Statewise Estimated Number of Rural Households, Estimated Number of Farmer Households, Estimated Number of Indebted Farmer Households and the percentage of Farmer Household Indebted

State	Estimated Number of Rural Households ('00)	Estimated Number of Farmer Households ('00)	Estimated Number of Indebted Farmer Households ('00)	Percentage of Farmer Households Indebted
Andhra Pradesh	142512	60339	49493	82
Arunachal Pradesh	15412	1227	72	5.9
Assam	41525	25040	4536	18.1
Bihar	116853	70804	23383	33
Chhattisgarh	36316	27598	11092	40.2
Gujarat	63015	37845	19644	51.9
Haryana	31474	19445	10330	53.1
Himachal Pradesh	11928	9061	3030	33.4
Jammu & Kashmir	10418	9432	3003	31.8
Jharkhand	36930	28238	5893	20.9
Karnataka	69908	40413	24897	61.6
Kerala	49942	21946	14126	64.4
Madhya Pradesh	93898	63206	32110	50.8
Maharashtra	118177	65817	36098	54.8
Manipur	2685	2146	533	24.8
Meghalaya	3401	2543	103	4.1
Mizoram	942	780	184	23.6
Nagaland	973	805	294	36.5
Orissa	66199	42341	20250	47.8
Punjab	29847	18442	12069	65.4
Rajasthan	70172	53080	27828	52.4
Sikkim	812	531	174	38.8
Tamil Nadu	110182	38880	28954	74.5
Tripura	5977	2333	1148	49.2
Uttar Pradesh	221499	171575	69199	40.3
Uttaranchal	11959	8962	644	7.2
West Bengal	121667	69226	34696	50.1
INDIA	1478988	893504	434242	48.6

Source: NSSO, 59th Round, Report No. 498.

Table 24: Percentage of Indebted Farmer Households in each Farm Size Category in different states

STATES	Marginal	Small	Semi-medium	Medium	Large	ALL
Andhra Pradesh	55.7	21.8	15.1	6.6	0.7	100
Arunachal Pradesh	27.8	44.4	27.8	0	0	100
Assam	70.6	20.8	8.1	0.5	0	100
Bihar	86.9	9.2	2.8	0.7	0.6	100
Chhattisgarh	44.6	30.6	16.9	7.5	0.4	100
Gujarat	45.7	21.7	18.3	13.2	1.1	100
Haryana	52.3	18.3	19.7	8.8	0.9	100
Himachal Pradesh	76.3	15.6	6.3	1.9	0	100
Jammu & Kashmir	72.9	13.7	12.6	0.9	0	100
Jharkhand	79.5	15.6	2.7	0.9	1.2	100
Karnataka	50.7	22.8	15.9	9.3	1.2	100
Kerala	87.7	9.1	2.6	0.5	0.1	100
Madhya Pradesh	33	27.1	23.1	13	3.9	100
Maharashtra	36	26.2	23.3	12.2	2.4	100
Manipur	80.1	18.6	1.1	0.2	0	100
Meghalaya	74.5	15.7	11.8	0	0	100
Mizoram	58.2	31	10.9	0	0	100
Nagaland	64.5	33.7	1.7	0	0	100
Orissa	70.3	20.6	7.3	1.7	0	100
Punjab	53.3	15.8	17	11.8	2.2	100
Rajasthan	43.9	19.8	17.8	14.1	4.5	100
Sikkim	82.2	14.9	2.9	0	0	100
Tamil Nadu	72.6	15.4	9.3	2.2	0.4	100
Tripura	94.7	5.3	0	0	0	100
Uttar Pradesh	71.3	17.4	7.8	3.4	0.3	100
Uttaranchal	72.7	21.2	5.9	0	0	100
West Bengal	88.7	8.5	2.4	0.4	0	100
All India	61	18.9	12.5	6.4	1.2	100

Source: Same as Table 23

Table 25: Percentage of Indebted Farmers' Households by Sources of Income in different states

STATES	Cultivation	Farming other than Cultivation	Other Agricultural Activity	Others	ALL
ANDHRA PRADESH	54.4	4.3	5.8	35.6	100
ARUNACHAL PRADESH	76.4	0	1.4	22.2	100
ASSAM	61	1.6	0	37.5	100
BIHAR	51.6	1.8	3.6	43.2	100
CHHATTISGARH	59.6	3.9	2.9	33.6	100
GUJARAT	62.9	2.6	4.4	30.2	100
HARYANA	59.8	3.8	2.1	34.4	100
HIMACHAL PRADESH	41.2	1.9	3.5	53.5	100
JAMMU & KASHMIR	39.1	3.2	0	57.9	100
JHARKHAND	49.1	1.4	3.6	45.8	100
KARNATAKA	60.2	2.8	6.5	30.5	100
KERALA	14.4	14.1	10.1	61.3	100
MADHYA PRADESH	64	1.4	5.7	29	100
MAHARASHTRA	62.6	1.7	2.4	33.3	100
MANIPUR	50.4	8.1	2.6	39.1	100
MEGHALAYA	78.4	2.9	5.9	13.7	100
MIZORAM	76.6	8.2	0	15.8	100
NAGALAND	69.4	0.7	0	29.9	100
ORISSA	52	1.1	4.8	42.1	100
PUNJAB	52.7	2	4	41.4	100
RAJASTHAN	58.4	4.3	3.1	34.3	100
SIKKIM	51.1	2.9	0	46.6	100
TAMIL NADU	50.7	5.7	3.1	40.5	100
TRIPURA	69.9	1.1	1.7	27.2	100
UTTAR PRADESH	66.4	2.6	1.8	29.3	100
UTTARANCHAL	67.4	0.9	0	31.3	100
WEST BENGAL	55.5	2.2	5.6	36.8	100
ALL INDIA	56.9	3.2	4.1	35.7	100

Source: Same as Table 23

Table 26: : Percentage of Indebted Farmers' Households by Social Groups in different states

STATES	ST	SC	OBC	OTHERS	ALL
ANDHRA PRADESH	10.8	16.8	47.7	24.7	100
ARUNACHAL PRADESH	48.6	0	0	51.4	100
ASSAM	7.1	10	21.3	61.6	100
BIHAR	2.9	17	59.8	20.4	100
CHHATTISGARH	30.8	16.7	49.2	3.3	100
GUJARAT	22.8	6.6	36.2	34.4	100
HARYANA	0.5	21.8	32.6	45.1	100
HIMACHAL PRADESH	6.7	27.8	17.7	47.9	100
JAMMU & KASHMIR	0	18.9	4.6	76.5	100
JHARKHAND	23.9	15.6	48	12.5	100
KARNATAKA	9.8	10.8	43	36.4	100
KERALA	1.6	4.5	49.6	44.3	100
MADHYA PRADESH	15.9	18.6	47.8	17.6	100
MAHARASHTRA	9.3	8.6	34.5	47.7	100
MANIPUR	22.9	0	57.4	19.7	100
MEGHALAYA	92.2	0	2.9	4.9	100
MIZORAM	100	0	0	0	100
NAGALAND	96.9	0	2.7	0.3	100
ORISSA	23.3	14.2	44.1	18.5	100
PUNJAB	0.2	26.1	15.8	57.9	100
RAJASTHAN	20.8	16.5	47	15.7	100
SIKKIM	26.4	4.6	34.5	34.5	100
TAMIL NADU	4.2	21.9	72.9	1	100
TRIPURA	41.4	17	14.9	26.7	100
UTTAR PRADESH	1.8	25.7	55.7	16.8	100
UTTARANCHAL	0	36.4	19	44.6	100
WEST BENGAL	5.7	29.6	7.4	57.3	100
ALL INDIA	10	18	43.9	28.1	100

Source: Same as Table 23

Table 27: Statewise Amount Outstanding per Farmer Household in different Farm Size classes

STATES	<.01	.01-.4	.41-1	1.01-2	2.01-4	4.01-10	>10	Amount Due(Rs/FHH)
ANDHRA PRADESH	12362	12192	18163	33043	29981	44865	103817	23965
ARUNACHAL PRADESH	40	0	138	1047	674	0	0	493
ASSAM	347	866	570	907	1138	4620	0	813
BIHAR	3464	3706	4055	6220	7479	2924	69144	4476
CHHATTISGARH	32154	1777	1746	3916	5356	21737	7386	4122
GUJARAT	4529	7343	6584	11976	30169	47718	84326	15526
HARYANA	8890	11225	18249	35300	50511	51978	93467	26007
HIMACHAL PRADESH	0	8173	7831	11133	20859	41660	0	9618
JAMMU & KASHMIR	0	1242	1808	2128	5250	3934	0	1903
JHARKHAND	1107	2205	1886	1928	2647	6918	27300	2205
KARNATAKA	8090	7962	13310	14559	26334	44763	80442	18135
KERALA	2077	24910	42458	61122	86029	156858	24860	33907
MADHYA PRADESH	5100	3335	7323	12467	19256	29642	61800	14218
MAHARASHTRA	8374	6848	8914	15890	18901	40038	125913	16973
MANIPUR	171	2553	2279	1472	8108	116	0	2269
MEGHALAYA	0	18	116	56	22	0	0	72
MIZORAM	400	229	2510	1933	430	0	0	1876
NAGALAND	346	174	910	1197	3012	0	0	1030
ORISSA	2165	3938	5955	6898	9681	11858	115304	5871
PUNJAB	8967	12892	16949	27543	94344	132907	267601	41576
RAJASTHAN	13206	9010	10565	15264	26715	31802	49630	18372
SIKKIM	1087	3065	1264	1811	5331	93	0	2053
TAMIL NADU	6088	13827	22109	31514	40382	87175	90892	23963
TRIPURA	1644	2105	3635	3098	0	0	0	2977
UTTAR PRADESH	5833	4368	5753	8628	17748	51293	12689	7425
UTTARANCHAL	348	964	314	6435	442	0	0	1108
WEST BENGAL	1770	4035	5325	9572	12329	13684	0	5237
ALL INDIA	6121	6545	8623	13762	23456	42532	76232	12585

Source: Same as Table 23

Table 28: Location Quotient of Amount Outstanding in different Farm Size classes in different states

STATES	< 0.01	0.01 - 0.4	0.41 - 1.0	1.01 - 2.0	2.01 - 4.0	4.01 - 10.0	> 10	Amount Outstanding (Rs/Farmer Household)
ANDHRA PRADESH	2.02	1.86	2.11	2.40	1.28	1.05	1.36	23965
ARUNACHAL PRADESH	0.01	0.00	0.02	0.08	0.03	0.00	0.00	493
ASSAM	0.06	0.13	0.07	0.07	0.05	0.11	0.00	813
BIHAR	0.57	0.57	0.47	0.45	0.32	0.07	0.91	4476
CHHATTISGARH	5.25	0.27	0.20	0.28	0.23	0.51	0.10	4122
GUJARAT	0.74	1.12	0.76	0.87	1.29	1.12	1.11	15526
HARYANA	1.45	1.72	2.12	2.57	2.15	1.22	1.23	26007
HIMACHAL PRADESH	0.00	1.25	0.91	0.81	0.89	0.98	0.00	9618
JAMMU & KASHMIR	0.00	0.19	0.21	0.15	0.22	0.09	0.00	1903
JHARKHAND	0.18	0.34	0.22	0.14	0.11	0.16	0.36	2205
KARNATAKA	1.32	1.22	1.54	1.06	1.12	1.05	1.06	18135
KERALA	0.34	3.81	4.92	4.44	3.67	3.69	0.33	33907
MADHYA PRADESH	0.83	0.51	0.85	0.91	0.82	0.70	0.81	14218
MAHARASHTRA	1.37	1.05	1.03	1.15	0.81	0.94	1.65	16973
MANIPUR	0.03	0.39	0.26	0.11	0.35	0.00	0.00	2269
MEGHALAYA	0.00	0.00	0.01	0.00	0.00	0.00	0.00	72
MIZORAM	0.07	0.03	0.29	0.14	0.02	0.00	0.00	1876
NAGALAND	0.06	0.03	0.11	0.09	0.13	0.00	0.00	1030
ORISSA	0.35	0.60	0.69	0.50	0.41	0.28	1.51	5871
PUNJAB	1.46	1.97	1.97	2.00	4.02	3.12	3.51	41576
RAJASTHAN	2.16	1.38	1.23	1.11	1.14	0.75	0.65	18372
SIKKIM	0.18	0.47	0.15	0.13	0.23	0.00	0.00	2053
TAMIL NADU	0.99	2.11	2.56	2.29	1.72	2.05	1.19	23963
TRIPURA	0.27	0.32	0.42	0.23	0.00	0.00	0.00	2977
UTTAR PRADESH	0.95	0.67	0.67	0.63	0.76	1.21	0.17	7425
UTTARANCHAL	0.06	0.15	0.04	0.47	0.02	0.00	0.00	1108
WEST BENGAL	0.29	0.62	0.62	0.70	0.53	0.32	0.00	5237
ALL INDIA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12585

Source: Calculated from Table 27

Table 29: Statewise per 1000 Rupees of Amount Outstanding by Farmer Household as per Purpose of Loan

STATES	Capital Expenditure	Current Expenditure	Non-Farm Business	Consumption Expenditure	Marriages and Ceremonies	Education	Medical	Others	ALL
ANDHRA PRADESH	234	381	32	115	96	14	24	105	1000
ARUNACHAL PRADESH	44	58	5	159	0	203	120	411	1000
ASSAM	166	67	162	124	118	1	15	348	1000
BIHAR	308	86	76	64	229	23	102	112	1000
CHHATTISGARH	403	300	82	67	64	3	34	47	1000
GUJARAT	203	503	39	63	102	5	30	56	1000
HARYANA	360	262	68	48	140	0	20	103	1000
HIMACHAL PRADESH	94	101	290	66	102	9	29	309	1000
JAMMU & KASHMIR	260	32	241	183	93	0	20	171	1000
JHARKHAND	272	53	248	105	98	0	9	216	1000
KARNATAKA	307	375	98	56	74	6	2	81	1000
KERALA	110	104	228	102	112	14	25	305	1000
MADHYA PRADESH	470	213	14	96	144	1	36	27	1000
MAHARASHTRA	379	375	48	42	49	9	15	83	1000
MANIPUR	4	30	124	113	93	87	220	331	1000
MEGHALAYA	321	464	0	142	1	2	0	69	1000
MIZORAM	807	0	2	126	0	12	0	53	1000
NAGALAND	115	60	189	127	44	81	8	376	1000
ORISSA	289	244	115	114	140	1	29	69	1000
PUNJAB	264	360	44	85	102	0	26	120	1000
RAJASTHAN	375	197	22	138	176	8	39	44	1000
SIKKIM	122	49	221	204	2	0	6	396	1000
TAMIL NADU	243	251	55	131	87	26	41	166	1000
TRIPURA	263	157	171	68	42	0	17	281	1000
UTTAR PRADESH	403	206	70	68	118	2	61	71	1000
UTTARANCHAL	184	158	173	92	74	0	22	297	1000
WEST BENGAL	244	213	103	72	111	5	51	201	1000
ALL INDIA	306	278	67	88	111	8	33	108	1000

Source: Same as Table 23

Table 30: Statewise per 1000 Rupees of Amount Outstanding by Farmer Household as per Sources of Loan

STATES	Government	Cooperative Society	Bank	Agricultural Moneylender	Trader	Relatives & Friends	Doctors, Lawyers etc	Others	ALL
ANDHRA PRADESH	10	104	200	534	48	53	9	41	1000
ARUNACHAL PRADESH	61	0	208	0	159	507	0	65	1000
ASSAM	70	27	278	155	120	247	5	99	1000
BIHAR	22	25	370	328	11	128	12	106	1000
CHHATTISGARH	13	206	505	130	42	63	7	35	1000
GUJARAT	5	418	272	65	44	177	9	10	1000
HARYANA	11	239	426	241	31	34	15	4	1000
HIMACHAL PRADESH	61	116	476	72	55	170	1	49	1000
JAMMU & KASHMIR	131	2	543	11	155	155	0	2	1000
JHARKHAND	39	45	557	190	17	136	4	12	1000
KARNATAKA	19	169	501	200	19	68	4	21	1000
KERALA	49	283	491	74	17	66	10	9	1000
MADHYA PRADESH	19	169	381	226	90	101	5	8	1000
MAHARASHTRA	12	485	341	68	8	59	3	24	1000
MANIPUR	15	0	167	329	40	401	0	49	1000
MEGHALAYA	60	0	0	128	3	809	0	0	1000
MIZORAM	243	31	499	0	33	193	0	0	1000
NAGALAND	75	77	536	3	153	155	0	0	1000
ORISSA	130	181	437	148	8	84	1	10	1000
PUNJAB	19	176	284	363	82	63	6	7	1000
RAJASTHAN	13	59	270	365	192	69	18	14	1000
SIKKIM	348	0	230	73	221	67	0	61	1000
TAMIL NADU	20	233	281	397	4	52	1	11	1000
TRIPURA	164	28	605	20	39	119	0	25	1000
UTTAR PRADESH	24	67	512	191	29	138	19	20	1000
UTTARANCHAL	315	48	398	59	17	149	0	14	1000
WEST BENGAL	103	192	285	130	107	154	7	23	1000
ALL INDIA	25	196	356	257	52	85	9	21	1000

Source: Same as Table 23

Table 31: Amount Borrowed (Rs/1000) by for different Purposes by Farmers in different Farm Size Classes in Southern Indian states

	Capital Expenditure in Farm Business	Current Expenditure in Farm Business	Non-Farm Business	Consumption Expenditure	Marriages and Ceremonies	Education	Medical	Others	ALL
ANDHRA PRADESH									
MARGINAL	150	233	53	162	164	14	49	175	1000
SMALL	290	375	12	108	90	4	15	106	1000
SEMI-MEDIUM	259	482	9	100	50	28	16	55	1000
MEDIUM	312	496	39	54	46	15	6	31	1000
LARGE	269	642	0	45	23	0	16	5	1000
cv (%)	24	34	99	50	74	90	81	91	
ALL SIZES	234	381	32	115	96	14	24	105	1000
KARNATAKA									
MARGINAL	172	227	207	104	138	6	4	141	1000
SMALL	247	499	55	54	71	5	0	70	1000
SEMI-MEDIUM	365	459	54	35	52	11	0	24	1000
MEDIUM	413	446	0	30	12	3	1	95	1000
LARGE	689	290	1	21	0	0	0	0	1000
cv (%)	53	31	134	68	100	80	176	85	
ALL SIZES	307	375	98	56	74	6	2	81	1000
KERALA									
MARGINAL	74	61	197	130	122	14	33	369	1000
SMALL	260	136	252	42	134	4	6	165	1000
SEMI-MEDIUM	207	251	301	44	18	6	8	165	1000
MEDIUM	27	381	575	0	0	0	0	17	1000
cv (%)	110	83	78	105	123	120	145	70	
ALL SIZES	110	104	228	102	112	14	25	305	1000

MAHARASHTRA	Capital Expenditure in Farm Business	Current Expenditure in Farm Business	Non-Farm Business	Consumption Expenditure	Marriages and Ceremonies	Education	Medical	Others	ALL
MARGINAL	284	255	62	97	99	1	48	154	1000
SMALL	324	354	54	39	64	10	8	146	1000
SEMI-MEDIUM	419	445	17	34	22	1	8	54	1000
MEDIUM	443	448	29	17	35	4	6	20	1000
LARGE	474	371	104	3	2	44	0	2	1000
cv (%)	21	21	63	95	85	152	138	94	
ALL SIZES	379	375	48	42	49	9	15	83	1000
TAMIL NADU									
MARGINAL	149	181	88	191	105	33	58	196	1000
SMALL	308	277	13	88	120	10	42	142	1000
SEMI-MEDIUM	352	376	17	70	59	7	15	103	1000
MEDIUM	440	302	12	53	13	58	0	122	1000
LARGE	277	186	429	0	0	0	0	109	1000
cv (%)	35	31	161	87	90	110	113	28	
ALL SIZES	243	251	55	131	87	26	41	166	1000
ORISSA									
MARGINAL	249	202	153	113	171	1	42	68	1000
SMALL	342	241	55	171	99	6	5	81	1000
SEMI-MEDIUM	300	485	46	42	36	0	9	82	1000
MEDIUM	642	326	0	32	0	0	0	0	1000
LARGE	1000	0	0	0	0	0	0	0	1000
cv (%)	62	71	123	97	120	197	158	92	
ALL SIZES	289	244	115	114	140	1	29	69	1000

Source: Same as Table 23

Table 32: Amount Borrowed (Rs/1000) by for different Purposes by Farmers in different Farm Size Classes in Northern Indian states

	Capital Expenditure in Farm Business	Current Expenditure in Farm Business	Non-Farm Business	Consumption Expenditure	Marriages and Ceremonies	Education	Medical	Others	ALL
BIHAR									
MARGINAL	223	58	85	90	291	17	132	103	1000
SMALL	403	191	29	9	119	0	59	190	1000
SEMI-MEDIUM	557	67	47	9	190	0	24	107	1000
MEDIUM	194	37	0	407	362	0	0	0	1000
LARGE	679	47	0	0	14	260	0	0	1000
cv (%)	51	79	111	169	70	207	129	101	
ALL SIZES	308	86	76	64	229	23	102	112	1000
GUJARAT									
MARGINAL	89	256	38	106	334	15	61	100	1000
SMALL	328	484	16	36	11	7	87	32	1000
SEMI-MEDIUM	281	475	100	4	49	0	9	82	1000
MEDIUM	142	728	2	106	17	0	4	1	1000
LARGE	331	575	0	0	0	0	0	94	1000
cv (%)	48	34	133	104	173	152	122	70	
ALL SIZES	203	503	39	63	102	5	30	56	1000
HARYANA									
MARGINAL	149	151	136	99	207	0	56	201	1000
SMALL	351	260	64	66	207	0	1	51	1000
SEMI-MEDIUM	591	239	0	10	45	0	17	97	1000
MEDIUM	352	420	0	10	150	0	0	68	1000
LARGE	565	421	0	2	11	0	0	0	1000
cv (%)	45	40	151	115	74	0	163	89	
ALL SIZES	360	262	68	48	140	0	20	103	1000

contd.

MADHYA PRADESH	Capital Expenditure in Farm Business	Current Expenditure in Farm Business	Non-Farm Business	Consumption Expenditure	Marriages and Ceremonies	Education	Medical	Others	ALL
MARGINAL	330	122	44	167	217	3	75	41	1000
SMALL	470	182	11	172	119	0	25	20	1000
SEMI-MEDIUM	399	243	9	59	242	0	31	16	1000
MEDIUM	572	272	8	37	44	1	15	49	1000
LARGE	650	235	0	37	26	0	50	0	1000
cv (%)	27	28	119	73	76	160	61	79	
ALL SIZES	470	213	14	96	144	1	36	27	1000
PUNJAB									
MARGINAL	170	83	89	185	203	1	73	197	1000
SMALL	120	496	101	120	76	3	0	84	1000
SEMI-MEDIUM	289	491	49	16	63	0	12	81	1000
MEDIUM	334	386	7	96	109	0	29	40	1000
LARGE	275	304	0	39	40	0	0	342	1000
cv (%)	38	48	94	74	65	169	134	83	
ALL SIZES	264	360	44	85	102	0	26	120	1000
RAJASTHAN									
MARGINAL	265	124	45	156	301	11	24	74	1000
SMALL	348	210	24	168	161	6	26	56	1000
SEMI-MEDIUM	432	181	19	110	207	19	10	22	1000
MEDIUM	452	259	13	116	70	0	44	46	1000
LARGE	382	245	0	154	80	0	137	2	1000
cv (%)	20	27	81	19	58	112	106	71	
ALL SIZES	375	197	22	138	176	8	39	44	1000

contd.

	Capital Expenditure in Farm Business	Current Expenditure in Farm Business	Non-Farm Business	Consumption Expenditure	Marriages and Ceremonies	Education	Medical	Others	ALL
UTTAR PRADESH									
MARGINAL	270	126	98	104	186	2	103	112	1000
SMALL	350	383	23	52	89	2	60	41	1000
SEMI-MEDIUM	606	164	105	18	63	4	5	33	1000
MEDIUM	627	287	0	47	20	0	1	18	1000
LARGE	729	265	0	6	0	0	0	0	1000
cv (%)	38	42	116	84	102	105	136	105	
ALL SIZES	403	206	70	68	118	2	61	71	1000
WEST BENGAL									
MARGINAL	185	190	116	83	128	5	71	222	1000
SMALL	423	254	88	35	54	8	12	125	1000
SEMI-MEDIUM	274	259	129	160	52	0	7	118	1000
MEDIUM	333	265	0	0	402	0	0	0	1000
LARGE									
cv (%)	33	14	70	100	104	120	146	78	
ALL SIZES	244	213	103	72	111	5	51	201	1000
ALL INDIA									
MARGINAL	186	159	112	127	168	11	58	178	1000
SMALL	326	320	46	87	99	5	24	93	1000
SEMI-MEDIUM	388	347	47	50	89	7	13	59	1000
MEDIUM	411	398	23	59	50	5	12	41	1000
LARGE	457	325	32	48	29	15	37	57	1000
cv (%)	30	29	67	45	62	51	67	64	
ALL SIZES	306	278	67	88	111	8	33	108	1000

Source: Same as Table 23

Table 33: Amount Borrowed (Rs/1000) by from different Sources by Farmers in different Farm Size Classes in Southern Indian states

	Government	Cooperative Society	Bank	Agricultural Moneylender	Trader	Relatives & Friends	Doctors, Lawyers etc	Others	ALL
ANDHRA PRADESH									
MARGINAL	17	71	142	614	33	77	6	41	1000
SMALL	3	111	152	546	48	69	6	65	1000
SEMI-MEDIUM	13	152	250	502	54	10	2	16	1000
MEDIUM	4	134	348	394	26	21	36	37	1000
LARGE	0	30	465	198	298	9	0	0	1000
cv (%)	98	49	50	36	126	89	147	78	
ALL SIZES	10	104	200	534	48	53	9	41	1000
KARNATAKA									
MARGINAL	25	141	371	286	24	115	4	34	1000
SMALL	14	223	350	302	14	82	0	16	1000
SEMI-MEDIUM	14	227	493	166	32	41	3	24	1000
MEDIUM	29	142	699	84	1	30	10	5	1000
LARGE	0	29	941	21	9	0	0	0	1000
cv (%)	69	53	44	72	76	84	120	88	
ALL SIZES	19	169	501	200	19	68	4	21	1000
KERALA									
MARGINAL	69	298	420	100	21	67	15	11	1000
SMALL	2	293	634	13	9	46	0	3	1000
SEMI-MEDIUM	0	119	845	0	13	23	0	0	1000
MEDIUM	3	88	582	0	0	293	0	34	1000
LARGE	0	240	463	0	0	297	0	0	1000
cv (%)	205	47	28	193	105	95	224	151	
ALL SIZES	49	283	491	74	17	66	10	9	1000

MAHARASHTRA	Government	Cooperative Society	Bank	Agricultural Moneylender	Trader	Relatives & Friends	Doctors, Lawyers etc	Others	ALL
MARGINAL	15	538	254	83	13	69	4	24	1000
SMALL	5	458	325	70	7	74	7	53	1000
SEMI-MEDIUM	6	496	336	62	9	77	2	12	1000
MEDIUM	28	443	416	61	6	31	2	13	1000
LARGE	1	508	402	58	0	29	0	2	1000
cv (%)	98	8	19	15	68	43	88	94	
ALL SIZES	12	485	341	68	8	59	3	24	1000
TAMIL NADU									
MARGINAL	18	207	189	506	4	62	1	12	1000
SMALL	19	235	361	299	4	72	3	8	1000
SEMI-MEDIUM	37	325	290	286	8	47	0	6	1000
MEDIUM	3	212	528	244	3	6	2	2	1000
LARGE	0	114	715	63	0	0	0	109	1000
cv (%)	96	34	50	56	74	87	121	167	
ALL SIZES	20	233	281	397	4	52	1	11	1000
ORISSA									
MARGINAL	131	142	449	183	7	82	0	5	1000
SMALL	178	208	335	130	15	96	4	34	1000
SEMI-MEDIUM	22	333	529	32	3	79	1	2	1000
MEDIUM	0	355	614	0	0	32	0	0	1000
LARGE	0	0	132	0	0	868	0	0	1000
cv (%)	125	70	45	120	126	154	173	178	
ALL SIZES	130	181	437	148	8	84	1	10	1000

Source: Same as Table 23

Table 34: Amount Borrowed (Rs/1000) by from different Sources by Farmers in different Farm Size Classes in Northern Indian states

	Government	Cooperative Society	Bank	Agricultural Moneylender	Trader	Relatives & Friends	Doctors, Lawyers etc	Others	ALL
BIHAR									
MARGINAL	20	18	254	394	14	142	13	143	1000
SMALL	5	53	603	198	4	78	18	40	1000
SEMI-MEDIUM	66	9	559	227	0	54	0	85	1000
MEDIUM	0	13	183	750	9	45	0	0	1000
cv (%)	153	75	49	84	113	77	140	114	
ALL SIZES	22	25	370	328	11	128	12	106	1000
GUJARAT									
MARGINAL	3	180	172	162	148	283	38	13	1000
SMALL	0	413	239	70	18	254	4	2	1000
SEMI-MEDIUM	2	410	437	43	11	98	0	0	1000
MEDIUM	14	597	191	17	5	154	0	21	1000
LARGE	0	575	425	0	0	0	0	0	1000
cv (%)	154	38	44	109	173	73	198	131	
ALL SIZES	5	418	272	65	44	177	9	10	1000
HARYANA									
MARGINAL	4	228	301	356	21	88	0	1	1000
SMALL	4	306	310	340	9	13	1	16	1000
SEMI-MEDIUM	1	269	594	99	13	19	5	0	1000
MEDIUM	46	156	392	217	99	6	84	0	1000
LARGE	38	110	599	197	55	0	2	0	1000
cv	116	38	34	44	96	142	200	205	
ALL SIZES	11	239	426	241	31	34	15	4	1000

contd.

MADHYA PRADESH	Government	Cooperative Society	Bank	Agricultural Moneylender	Trader	Relatives & Friends	Doctors, Lawyers etc	Others	ALL
MARGINAL	26	90	295	309	125	123	5	28	1000
SMALL	10	135	382	211	142	104	6	9	1000
SEMI-MEDIUM	4	152	312	349	76	97	6	4	1000
MEDIUM	3	212	516	108	51	105	5	2	1000
LARGE	88	333	418	64	39	59	0	0	1000
cv (%)	136	51	23	59	52	24	57	133	
ALL SIZES	19	169	381	226	90	101	5	8	1000
PUNJAB									
MARGINAL	54	107	202	305	84	207	10	33	1000
SMALL	0	220	271	355	29	115	10	0	1000
SEMI-MEDIUM	26	217	369	311	58	10	9	0	1000
MEDIUM	1	173	301	359	134	31	0	0	1000
LARGE	0	146	155	653	46	1	0	0	1000
cv (%)	148	28	32	37	58	120	92	224	
ALL SIZES	19	176	284	363	82	63	6	7	1000
RAJASTHAN									
MARGINAL	20	49	140	528	146	88	20	10	1000
SMALL	4	53	272	410	133	82	40	7	1000
SEMI-MEDIUM	10	50	341	369	158	49	0	22	1000
MEDIUM	18	98	303	251	235	54	30	12	1000
LARGE	8	34	340	167	350	83	0	17	1000
cv (%)	56	43	30	41	44	26	100	43	
ALL SIZES	13	59	270	365	192	69	18	14	1000

contd.

UTTAR PRADESH	Government	Cooperative Society	Bank	Agricultural Moneylender	Trader	Relatives & Friends	Doctors, Lawyers etc	Others	ALL
MARGINAL	26	39	339	299	40	202	25	31	1000
SMALL	39	80	566	143	24	128	14	5	1000
SEMI-MEDIUM	26	113	659	103	14	66	8	11	1000
MEDIUM	1	86	798	15	9	43	25	23	1000
LARGE	0	32	950	6	12	0	0	0	1000
cv (%)	93	49	35	105	63	90	76	91	
ALL SIZES	24	67	512	191	29	138	19	20	1000
WEST BENGAL									
MARGINAL	111	154	229	157	126	189	10	25	1000
SMALL	54	278	469	58	69	57	1	14	1000
SEMI-MEDIUM	30	259	465	26	135	40	8	36	1000
MEDIUM	132	58	23	222	17	549	0	0	1000
LARGE									
cv (%)	58	54	72	78	63	113	105	82	
ALL SIZES	103	192	285	130	107	154	7	23	1000
ALL INDIA									
MARGINAL	39	155	281	316	47	122	11	28	1000
SMALL	17	205	354	259	42	88	8	26	1000
SEMI-MEDIUM	15	226	410	234	47	51	4	14	1000
MEDIUM	13	230	445	167	61	56	15	12	1000
LARGE	17	232	427	172	106	40	0	6	1000
cv (%)	52	15	17	27	43	47	77	55	
ALL SIZES	25	196	356	257	52	85	9	21	1000

Source: Same as Table 23

Table 35: Statewise level of net returns per hectare, cost of cultivation per hectare and percentage of marketable surplus

STATES	RECEIPTS (Rs)	EXPENSES (Rs)	NET RETURNS (Rs)	GCA (hectares)	NR/GCA (Rs/hect)	A.E/GCA	MS (%)
Andhra Pradesh	135877544400	89866477000	46011067400	9936840	4630.35	9043.77	58.50
Arunachal Pradesh (r)	3942243500	615859200	3326384300	284818	11678.98	2162.29	5.76
Assam	102587686500	15357427000	87230259500	3291514	26501.56	4665.76	22.75
Bihar	230413522000	15357427000	215056095000	8792402	24459.31	1746.67	10.32
Chhattisgarh	43921311900	16763558000	27157753900	5353858	5072.56	3131.12	12.33
Gujarat	114698012600	55203027200	59494985400	9436007	6305.10	5850.25	53.67
Haryana	90861474000	46347336000	44514138000	4592029	9693.78	10093.00	49.76
Himachal Pradesh	24975027200	8816617600	16158409600	1267967	12743.56	6953.35	15.25
Jammu & Kashmir	55765133600	11142259800	44622873800	1280855	34838.35	8699.08	27.66
Jharkhand	44170590600	10027714800	34142875800	11655539	2929.33	860.34	17.17
Karnataka	126722280300	59600059200	67122221100	9937677	6754.32	5997.38	55.03
Kerala	87788247000	31721406500	56066840500	1769631	31682.79	17925.44	67.08
Madhya Pradesh	211196339200	86067130200	125129209000	20353690	6147.74	4228.58	38.85
Maharashtra	214989702900	100322014300	114667688600	15712529	7297.85	6384.84	43.50
Manipur	4304447000	1312265600	2992181400	148627	20132.15	8829.25	6.48
Meghalaya	21631547700	3998164800	17633382900	458254	38479.50	8724.78	80.40
Mizoram	5464753500	162378000	5302375500	167691	31619.92	968.32	27.42
Nagaland	3305445000	338814400	2966630600	112144	26453.76	3021.24	15.70
Orissa	33258139200	16641556400	16616582800	4873735	3409.41	3414.54	5.07
Punjab	133812424800	52561975500	81250449300	4860410	16716.79	10814.31	59.91
Rajasthan	72028552800	52973611200	19054941600	16678280	1142.50	3176.20	27.59
Sikkim	1544540400	412124300	1132416100	53899	21009.96	7646.23	47.09
Tamil Nadu	69551187000	40809099300	28742087700	4816731	5967.14	8472.36	66.10
Tripura	5090392200	1576878800	3513513400	143435	24495.51	10993.68	20.29
Uttar Pradesh	587929832000	276477332800	311452499200	24387696	12770.89	11336.75	21.62
Uttaranchal	39107850600	5848625000	33259225600	829736	40084.11	7048.78	16.09
West Bengal	191859207000	97141696300	94717510700	5767232	16423.39	16843.73	39.79
INDIA	2656797434900	1097462836200	1559334598700	158047647	9866.23	6943.87	70.38

Source: NSSO, 59th Round, Report No. 497.

Table 36: Statewise level of net returns per hectare, cost of cultivation per hectare and percentage of marketable surplus*

STATES	RECEIPTS (Rs)	EXPENSES (Rs)	NET RETURNS (Rs)	GCA (hectares)	NR/GCA (Rs/hect)	A.E/GCA	MS (%)
Andhra Pradesh	135877544400	89866477000	46011067400	9936840	4630.35	9043.76814	58.50
Arunachal Pradesh	3942243500	615859200	3326384300	284818	11678.98	2162.290305	5.76
Assam	102587686500	15357427000	87230259500	3291514	26501.56	4665.76384	22.75
Bihar	274584112600	100925141200	173658971400	11499045	15102.03	8776.828093	11.43
Gujarat	114698012600	55203027200	59494985400	9436007	6305.10	5850.252888	53.67
Haryana	90861474000	46347336000	44514138000	4592029	9693.78	10092.99723	49.76
Himachal Pradesh	24975027200	8816617600	16158409600	1267967	12743.56	6953.349417	15.25
Jammu & Kashmir	55765133600	11142259800	44622873800	1280855	34838.35	8699.079755	27.66
Karnataka	126722280300	59600059200	67122221100	9937677	6754.32	5997.383413	55.03
Kerala	87788247000	31721406500	56066840500	1769631	31682.79	17925.43559	67.08
Madhya Pradesh	255117651100	102830688200	152286962900	25707548	5923.82	4000.019302	34.19
Maharashtra	214989702900	100322014300	114667688600	15712529	7297.85	6384.84195	43.50
Manipur	4304447000	1312265600	2992181400	148627	20132.15	8829.254442	6.48
Meghalaya	21631547700	3998164800	17633382900	458254	38479.50	8724.778834	80.40
Mizoram	5464753500	162378000	5302375500	167691	31619.92	968.3167254	27.42
Nagaland	3305445000	338814400	2966630600	112144	26453.76	3021.244115	15.70
Orissa	33258139200	16641556400	16616582800	4873735	3409.41	3414.538624	5.07
Punjab	133812424800	52561975500	81250449300	4860410	16716.79	10814.30898	59.91
Rajasthan	72028552800	52973611200	19054941600	16678280	1142.50	3176.203493	27.59
Sikkim	1544540400	412124300	1132416100	53899	21009.96	7646.232769	47.09
Tamil Nadu	69551187000	40809099300	28742087700	4816731	5967.14	8472.364203	66.10
Tripura	5090392200	1576878800	3513513400	143435	24495.51	10993.68216	20.29
Uttar Pradesh	627037682600	282325957800	344711724800	25217432	13669.58	11195.66647	21.27
West Bengal	191859207000	97141696300	94717510700	5767232	16423.39	16843.72959	39.79
INDIA	2656797434900	1173002835600	1483794599300	158047647	9388.27	7421.830428	79.05

Source: Same as table 35.

*The figures of Chhattisgarh, Jharkhand and Uttaranchal are merged with Madhya Pradesh, Bihar and Uttar Pradesh in this table.

APPENDIX II
BIBLIOGRAPBY

Articles

1. K. C. Suri (2006), 'Political Economy of Agrarian Distress', Economic and Political Weekly, April 22.
2. P Narasimha Rao, K. C. Suri (2006), 'Dimensions of Agrarian Distress in Andhra Pradesh', Economic and Political Weekly, April 22.
3. Sukhpal Singh (2006), 'Credit, Indebtedness and Farmer Suicides in Punjab', Economic and Political Weekly, July 29.
4. V Ratna Reddy, S Galab (2006), ' Looking beyond the Debt Trap', Economic and Political Weekly, May 13.
5. K. G. K. Subba Rao (2006), 'Indebtedness of Cultivator Households', Economic and Political Weekly, August 12.
6. V. M. Rao, D. V. Gopalappa (2004), 'Agricultural Growth and Farmer Distress Tentative Perspectives from Karnataka', Economic and Political Weekly, December 25.
7. A. R. Vasavi (1999), 'Agrarian Distress in Bidar Market, State and Suicides', Economic and Political Weekly, August 7.
8. R. S. Deshpande, Nagesh Prabhu (2005), 'Farmers' Distress Proof beyond Question', Economic and Political Weekly, October 29.
9. V. S. Vyas (2004), 'Agrarian Distress: Strategies to Protect Vulnerable Sections', Economic and Political Weekly, December 25.
10. A. Narayanamoorthy (2006), 'State of India's Farmers', Economic and Political Weekly, February 11.
11. B. B. Mohanty, Sangeeta Shroff (2004), 'Farmers' Suicides in Maharashtra', Economic and Political Weekly, December 25.
12. S. Mohanakumar, R. K. Sharma (2006), 'Analysis of Farmer Suicides in Kerala', Economic and Political Weekly, April 22.

13. Anita Gill, Lakhwinder Singh (2006), 'Farmers' Suicides and Response of Public Policy Evidence, Diagnosis and Alternatives from Punjab', Economic and Political Weekly, June 30.
14. A. Narayanamoorthy (2006), 'Relief Package for Farmers: Can It Stop Suicides?', Economic and Political Weekly, August 5.
15. Srijit Mishra (2006), 'Farmers' Suicides in Maharashtra', Economic and Political Weekly, April 22.
16. Akkineni Bhavani Prasad (2006), 'Farmers' Suicides: Andhra Pradesh', Yojana, August 2006.
17. C. S. Murty (2004), 'Large Farmers in Lease Market Are Marginal Farmers Affected?', Economic and Political Weekly, July 17.
18. P. C. Bansil (2004), 'Farmers in Lease Market', Economic and Political Weekly, August 28.
19. K. N. Nair, Vineetha Menon (2006), 'Lease Farming in Kerala Findings from Micro Level Studies', Economic and Political Weekly, June 30.
20. P. Satish (2006), 'Institutional Credit, Indebtedness and Suicides in Punjab', Economic and Political Weekly, June 30.
21. Rakesh Mohan (2006), 'Agricultural Credit in India Status, Issues and Future Agenda', Economic and Political Weekly, March 18.
22. Anita Gill (2004), 'Interlinked Agrarian Credit Markets Case Study of Punjab', Economic and Political Weekly, August 14.
23. Anirudh Krishna et al., (2004), 'Falling into Poverty in Villages of Andhra Pradesh Why Poverty Avoidance Policies are Needed', Economic and Political Weekly, July 17.
24. Surinder S Jodhka (2006), 'Beyond 'Crises' Rethinking Contemporary Punjab Agriculture', Economic and Political Weekly, April 22.
25. K. N. Selvaraj, C. Ramasamy (2006), 'Drought, Agricultural Risk and Rural Income Case of a Water Limiting Rice Production Environment, Tamil Nadu', Economic and Political Weekly, June 30.
26. Avinash Kishore (2004), 'Understanding Agrarian Impasse in Bihar', Economic and Political Weekly, July 31.

Books

1. Sukhdeo Thorat and Smita Sirohi (2005), 'Rural Infrastructure', State of the Indian Farmer series, Vol 4, Academic Foundation.
2. P. M. Shingi et al., (2005), 'Agricultural Extension', State of the Indian Farmer series, Vol 6, Academic Foundation.
3. Surjit Singh and Vidya Sagar (2005), 'Agricultural Credit in India', State of the Indian Farmer series, Vol 7, Academic Foundation.
4. Bharat Ramaswami et al., (2005), 'Risk Management', State of the Indian Farmer series, Vol 22, Academic Foundation.