

IMPACT OF SUBSIDIES ON AGRICULTURAL DEVELOPMENT

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PREFACE

Recent fiscal crisis has brought forth the issue of subsidies to the forefront. The most important component of the debate was subsidies to the agricultural sector and especially the fertilizer subsidies which constitute the bulk of the total subsidies. It was decided to partially withdraw the fertilizer subsidy and review the entire subsidy policy. Present study is an attempt towards understanding the impact of subsidies on agricultural development of Maharashtra. Not many studies have attempted analysis of the impact of subsidies at micro level as also that of the directly targeted subsidies. We have attempted here the analysis of the impact of direct subsidies at state, district and farm level.

The study was undertaken as one of the common studies taken up at Agro Economic Research Centre. It was only the sincere efforts on the part of all in our team that could lead the study to completion. We are extremely grateful to Prof. D. C. Wadhwa, Director of the Institute for continuous encouragement. He did not spare any efforts to get all the needed help for completion of the study. The efforts of the administrative staff of the Institute could help us in completing the work. We are thankful to all of them.

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(iv)

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(v)

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CONTENTS

	<u>Page</u>
FOREWORD	(i)
PREFACE	(iii)
LIST OF TABLES	(viii)

Chapter

I	INTRODUCTION	1
	1.1	1
	1.2	4
	1.3	8
	1.4	15
	1.5	17
	1.6	17
II	SUBSIDIES AND AGRICULTURAL DEVELOPMENT	19
	2.1	19
	2.2	23
	2.3	31
	2.3.1	32
	2.3.2	36
	2.3.3	40
	2.4	59
	2.5	67

<u>Chapter</u>		<u>Page</u>
III	FARM LEVEL IMPACT OF SUBSIDIES ...	71
	3.1 Introduction...	71
	3.2 The Study Area	73
	3.3 Land Use and Cropping Pattern	75
	3.4 Input Use Structure	86
	3.5 Use of Modern Inputs	92
	3.6 Production, Income and Asset Holding	99
	3.7 Impact Assessment of Subsidies: Farmers' Perceptions	108
	3.8 Conclusions ...	115
IV	SUMMARY AND CONCLUSIONS ...	117
	4.1 An Overview ...	117
	4.2 Objectives ...	119
	4.3 Methodology and Coverage	119
	4.4 Main Findings and Policy Implications ..	121
	REFERENCES ...	126
	ERRATA ...	132

LIST OF TABLES

<u>Table No.</u>		<u>Page</u>
2.1	Real Economic Costs of Input Subsidies	22
2.2	Regional Spread of Subsidies	25
2.3	Cross Classification of States According to the Level of Growth in Foodgrains Productivity	26
2.4	Districts Classified According to Level and Variability of Annual Rainfall	35
2.5	Cropping and Irrigation Pattern of Principal Crops: Maharashtra State	37
2.6	Development of Irrigation Potential Through Plan Periods in Maharashtra	39
2.7	Sub-periodwise Rates of Growth in Area, Production and Yield of Principal Crops: Maharashtra State	41
2.8	Decomposition of Agricultural Production: Maharashtra State	43
2.9	Rates of Growth in Area, Production and Yield Per Hectare for Crop Groups: Maharashtra State (1978 to 1989-90)	45
2.10	Maharashtra Overall Finances	61
2.11	Growth of Investment in Irrigation, Electricity and Rural Development	62
2.12	Expenditure Over Different Schemes in Maharashtra (1988-89, 1989-90, 1990-91)	64
2.13	Districtwise Distribution of Direct Subsidies Along With Main Development Indicators	65
2.14	Cross-Classification of Districts According to Levels of Subsidies, Growth Rate in Foodgrain Yield and Size of Holding	67
Appendix		
2.1	Trends in the Implicit Subsidies in Maharashtra	70

<u>Table No.</u>	<u>Page</u>
Appendix	
2.2 Expenditure on Various Subsidies Schemes	70(A)
3.1 A Comparative Picture of Selected Districts	74
3.2(A) Land Utilization of Beneficiaries and Non-Beneficiaries (Akola)	76
3.2(B) Land Utilization of Beneficiaries and Non-Beneficiaries (Ahamednagar)	77
3.2(C) Land Utilization of Beneficiaries and Non-Beneficiaries (Latur)	78
3.2(D) Land Utilization of Beneficiaries and Non-Beneficiaries (Nashik)	79
3.3(A) Cropping Pattern of Beneficiaries and Non-Beneficiaries (Akola)	81
3.3(B) Cropping Pattern of Beneficiaries and Non-Beneficiaries (Ahamadnagar)	82
3.3(C) Cropping Pattern of Beneficiaries and Non-Beneficiaries (Latur)	83
3.3(D) Cropping Pattern of Beneficiaries and Non-Beneficiaries (Nashik)	84
3.4(A) Input Structure of Beneficiaries and Non-Beneficiaries (Akola)	88
3.4(B) Input Structure of Beneficiaries and Non-Beneficiaries (Ahamadnagar)	89
3.4(C) Input Structure of Beneficiaries and Non-Beneficiaries (Latur)	90
3.4(D) Input Structure of Beneficiaries and Non-Beneficiaries (Nashik)	91
3.5(A) Use of Modern Inputs by Beneficiaries and Non-Beneficiaries (Akola)	93
3.5(B) Use of Modern Inputs by Beneficiaries and Non-Beneficiaries (Ahamadnagar)	94
3.5(C) Use of Modern Inputs by Beneficiaries and Non-Beneficiaries (Latur)	95

(x)

<u>Table No.</u>	<u>Page</u>
3.5(D) Use of Modern Inputs by Beneficiaries and Non-Beneficiaries (Nashik)	96
3.6(A) Employment Particulars Across Size Classes (Akola)	97
3.6(B) Employment Particulars Across Size Classes (Ahamadnagar)	97
3.6(C) Employment Particular Across Size Classes (Latur)	98
3.6(D) Employment Particulars Across Size Classes (Nashik)	98
3.7(A) Productivity of Crops Per Hectare for Beneficiaries and Non-Beneficiaries (Akola)	100
3.7(B) Productivity of Crops Per Hectare for Beneficiaries and Non-Beneficiaries (Ahamadnagar)	101
3.7(C) Productivity of Crops Per Hectare for Beneficiaries and Non-Beneficiaries (Latur)	102
3.7(D) Productivity of Crops Per Hectare for Beneficiaries and Non-Beneficiaries (Nashik)	103
3.8(A) Asset Holding Per Hectare (Akola)	105
3.8(B) Asset Holding Per Hectare (Ahamadnagar)	105
3.8(C) Asset Holding Per Hectare (Latur)	106
3.8(D) Asset Holding Per Hectare (Nashik)	106
3.9 Farmers Perception About Usefulness of Subsidies	108
3.10(A) Net Income of Farm Houses (Akola)	110
3.10(B) Net Income of Farm Houses (Ahamadnagar)	110
3.10(C) Net Income of Farm Houses (Latur)	111
3.10(D) Net Income of Farm Houses (Nashik)	111
3.11 Response of Farmers to Change in Fertilizer Prices	113
3.12 Difficulties Faced by Farmers While Obtaining Subsidized Inputs	114

FOREWORD

The new economic policy statement tackled several issues including the increasing volume of budgetary subsidies. Over the past two decades, subsidies have formed a substantial amount of total public expenditure. A review of the policy indicated necessity of cutting down the increasing amount of subsidies. As a first step towards this, the fertilizer prices were increased by reducing the amount of subsidies. Several issues were raised in the debate that preceded the policy change and continued thereafter.

The present study completed by Dr. R.S. Deshpande and Dr. V. Ratna Reddy at the Agro-Economic Research Centre of the Institute reviews the policy of input subsidies in agriculture both at macro and micro levels. Their focus is on the impact of direct subsidies on agricultural development. It emerges from the study that theoretically the policy of subsidies had a large scope towards correcting the inter-regional and intra-regional disparities. But in fact the subsidies have largely gone only to the developed regions thereby widening the gap between regions. The macro level analysis indicates a disturbing picture of inter-regional disparities both across States and districts. At the micro level, it was evident that subsidies have been working positively as income- and employment-generating policy measures. It was also noted that the cropping intensity as well as adoption of modern

(ii)

technology have been higher in the beneficiary group. The perception of the farmers about the policy also indicates positively encouraging impact. It is indicated in the study that the policy of distribution of subsidies, however, needs certain administrative changes both in terms of designing and targeting.

The study was sponsored by Ministry of Agriculture to review the policy framework of input subsidies at micro level in the State of Maharashtra. We hope the results would serve the purpose.

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CHAPTER I

INTRODUCTION

1.1 Introduction

Agricultural policy instruments in the post-seventies were rightly focussed towards the weaker sections of rural population. The failure of ^{the} area approach in generating sufficient income for this section has led to the target group specific approach. The seed-water-fertilizer technology brought forth the issue about access to resources in sharp focus than distribution of resources itself (Dantwala, 1987). This was mainly due to the fact that the concentration of small and marginal farmers increased at a very fast rate during the last three decades. About 55 per cent of the cultivators have holdings less than 1 hectare and of these, about half have holdings even less than 0.5 hectares. In fact, over the years the average size of holding is declining at a faster rate, both due to demographic and economic pressures. Many of the marginal holdings ^{are} becoming uneconomic on one hand, and on the other, the rich peasants are changing towards non-agricultural professions. The rural-urban migration has no more remained restricted to the unskilled labourers alone.¹ Environmental degradation has further aggravated economic and technological pressures on the small and marginal farmers.

Weaker sections of the society were dependent on the quality of environment in several ways. Firstly, majority of these group depended on village commons as a supporting

source of their livelihood. Thus the rate of replenishment was always ahead of the use rate. But the fast commercialization and increased role of market forces pushed the use rates much ahead and ultimately beyond the critical limits. Secondly, this process of degradation has resulted in soil degradation and lower productivity in terms of net energy output.² Thirdly, the resulting situation has caused need for larger nutritional requirements for maintaining productivity levels.

Composition of the new seed-water-fertilizer technology is such that it has increased the need for purchased inputs. The use of fertilizers has increased from 1.90 kgs per hectare in 1960-61 to 48 kgs per hectare in 1986-87.³ Similarly, the pesticide use has also increased substantially. It is noted recently that the increased costs even offset the net revenue earned per hectare (Nadkarni, 1988). There are, however, wide regional differences across the length and breadth of the country. This is of course true about the different classes of farmers. Those on the margin of viability either cannot afford to use the new inputs or borrow to get the cash inputs in order to purchase the new inputs.

Though agricultural production is basically a private activity miopically viewed as that because of the private ownership of land, the role of State as a welfare state and provider of economic opportunities must be / ^{considered} as a crucial factor. Infrastructure supporting agriculture is always under the State control. The policies deciding infra-structural growth and distribution thus influence the

production process. The distribution network of inputs, their production, prices, marketing of products as well as factors fall directly under the influence of State policies (Pani, 1991). Therefore, contrary to the usually held view, the role of the state in agricultural sector both through positive and regulatory interventions cannot be neglected.

Over the last decades, the role of state in agriculture increased both on production side as well as in the factor markets. The intervention in the product market came through levy on different commodities, procurement and support prices. Apart from these, various market regulations and the large network of public distribution system kept the prices of agricultural products under direct control unlike the industrial sector. Major focus of the price policy for a long time remained with the protection of consumers. The focus changed towards the producers only after the farmers' agitations of mid-seventies. It will, however, be difficult to state whether the market conditions for agricultural sector are comparable with industrial products.⁴

In order to overcome the relative price disadvantages faced by the cultivators, it was essential to reduce the pressure on cost front. The incentives on the factor side included both direct incentives as well as implicit incentives in the form of lower priced inputs. Among the well discussed implicit subsidies fall the fertilizers, credit, irrigation and electricity. All of these are routed through a lower input price charged to the farmers. On the other hand, the

explicit subsidies come either in the form of special programmes taken by state or sponsored by Central Government. These programmes in the recent past included National Oilseed Development Programme (NODP), National Pulses Development Programme (NPDP), Special Component Programme, Minikits Provision, Special Rice Development Programme and the likes. Under these programmes, various inputs are supplied at lower prices or minikits of the inputs are provided to the cultivators. Similarly, farm equipments are also provided to the cultivators.

1.2 The Debate

Given the fiscal burden inflicted by the subsidies and highlighted in many studies, the question about the role of subsidies is being debated. On one side we have various arguments favouring subsidies and continuation of these in the present situation (Minhas (1987), Shah (1986), Reddy and Deshpande (1992)) whereas on the other hand, there are studies arguing discontinuation of these (Asha, P. (1985), Parekh and Suryanarayana (1989), Bhattacharya (1989), Ahluwalia (1991)).

Arguments favouring induction and continuation of subsidies fall in two groups. The first group argues for the rationale in introduction of subsidies. There are five arguments advanced while defending the rationale behind induction of subsidies in the policy framework. Firstly, on the price and product market front the consumers are protected and as a result the farmers (producers) receive lower prices. It also becomes necessary to protect the cultivators in this situation by providing inputs at lower prices. Secondly,

agriculture is a risky enterprise and it always does not pay enough to the cultivators to retain him in the sector. In order to increase the net returns of the cultivator it is necessary to bring down his input costs (since prices cannot protect all the cultivators at the same time). Provision of subsidized inputs reduces the pressure on the cost front and insures the cultivators from probable degree of risk along with non-viability. Subsidies also encourage use of modern inputs. Thirdly, subsidies can be effectively used as policy tool to correct inter-crop imbalances. It supports the price policy as a tool to dampen the bold price responses as well as to bring out clearly certain anticipated impacts of price changes. In recent past, direct subsidies were introduced under National Oilseed Development Programme or Pulses Development Programme in order to bring larger area under these crops. To a large extent these two programmes yielded the required result. Fourthly, subsidies can be effectively used as a tool to correct the inter-regional and intra-regional imbalances in agricultural growth. If applied selectively, these will help in directing the growth pattern of depressed regions and classes. Lastly, in the environmentally critical zones subsidies can play an important role in directing private investment towards the environmental programmes which otherwise do not attract any private investment. ^{We get} a clear idea about the theoretical impact of subsidies from Figure 1.1 (overleaf). PP' is the production surface in rational zone of production and OA is the current production level with OB amount of inputs.

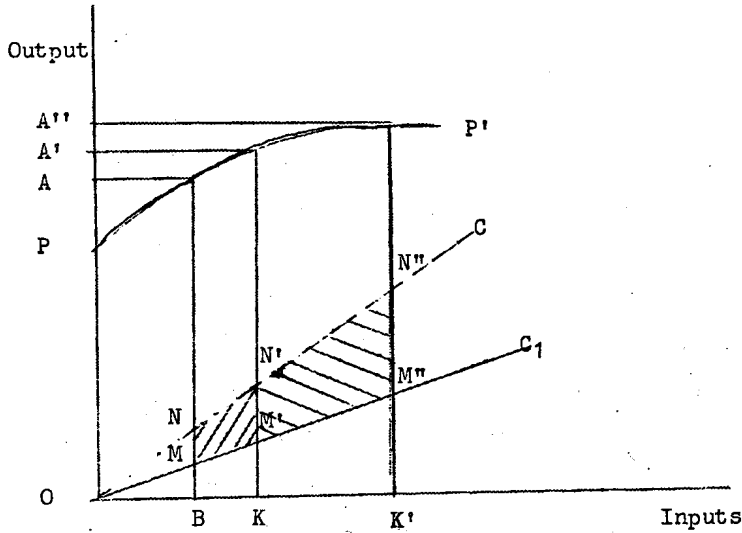


Figure 1.1

OC and OC_1 are the cost functions before and after the introduction of subsidy (or with and without subsidy). MN is the amount of subsidy provided and hence it is possible to increase the input intensity to OK instead of OB with an accompanied increase in output of AA' . Further this would allow another increment in the subsidies of an order KK' (which is equal to $M'N'$) pushing further the production to OA'' . It is possible to increase the subsidies till $\frac{AA'}{BK}$ $\frac{A'A''}{KK'}$ and so on.⁵ It may be noted here that the role of prices is not assumed to be significant both in factor and product market (a very crucial assumption indeed). It must, however, be noted that if the factor market prices are monitored by subsidy policy

then there should be a proper price intervention in product market.

Policies leading to large scale subsidies in the recent past have raised serious doubts about the balance between favourable effects and the detrimental implications. Among the various implications of subsidies, six are the most discussed effects. Firstly, enormous fiscal burden is built up by subsidies of various kinds. Fertilizer subsidy alone amounted to over Rs. 4601 crores in 1989-90 (Gulati, 1991, p. 80). Losses of the state electricity boards, investment in irrigation and the credit subsidies also swell the fiscal burden beyond redemption. Secondly, improper monitoring of irrigation and electricity subsidies have led to distortions in cropping pattern with large quantity of water consumed largely by heavy water consuming crops. Similarly some of the direct subsidies provided through NODP, NPDP are not being used for the purpose these are meant. For example, a sprinkler or drip irrigation set provided under oilseed development programme are being used on grape and orange gardens. But such failures cannot be attributed to policy alone and monitoring as well as administration must share the burden of such failures. Thirdly, in the present policy set up subsidies may lead to serious regional imbalances. The major subsidies (fertilizer, electricity, credit and irrigation) are directly related to the growth in agricultural sector across States. Moreover, these are conditioned by infrastructural development, which means that the larger amount of subsidies go towards the better endowed regions thereby widening the inter-regional gap in

the development scenario across States. Again this forms a part of the implementation failures. Fourthly, given the village structure, power equation and differential access to resources, it is not surprising that the distribution of subsidies across farmers is skewed in favour of a certain class. Hence, the large parts of the benefits have gone to the better endowed sectors, which again points towards a system failure. Fifthly, it may be noted that even industries supplying agricultural inputs are also benefited by the subsidy policy. At present 80 per cent of domestic production of fertilizer is from public, cooperative/joint sector-plants and thus 80 per cent of the fertilizer subsidies accrues to such plants (Parikh and Suryanarayana, 1989, p. 47). Lastly, what is more dangerous is the culture of subsidies which creates larger dependence on the state intervention both on the parts of cultivators as well as industries supplying agricultural inputs. It also creates environmental problems by using uneconomic doses of fertilizer, water, wastage of electricity and misuse of credit for other purposes because the inputs are available at less than the market prices.

1.3 A Quick Review of Studies

There are a number of studies which deal with the issue of subsidies in agricultural sector. Specifically, after the announcement of 1992 budget cuts in the subsidies, large number of academicians have taken part in the debates. The studies can be broadly grouped into four groups, viz.:

1. Studies dealing with the estimation of subsidies in the country and across states based on different methodologies.
2. Studies involving the review of subsidy policy.
3. Studies analysing the impact of subsidies at macro level and across states.
4. Studies dealing with different issues like who benefits from subsidies, inter-regional spread, individual subsidies, etc.

Subsidies are routed through two channels upto the cultivator. ^{The} /first one involves the pricing policy in factor markets. This group covers the fertilizer, irrigation, credit and electricity. Fertilizer prices for both farmers and producers are controlled. Producers are given what is called as retention price which varies from plant to plant whereas, a uniform price is charged to the farmers. The subsidy is measured as the difference between what farmer actually pays and what he would have actually paid. Irrigation subsidy constitutes the gap between the expenditure and revenue (through water charges) in the irrigated region of the country. Subsidy on electricity is again the difference between the cost and revenue of the electricity boards. Farmers are charged at flat rates whereas other users are charged at concessional rates. Credit subsidies are estimated as difference between true costs and the actual interest paid. Sudipto Mundle and M. Govind Rao (1991) undertook an exercise of measuring the volume and composition of subsidies provided by the Central

and 14 State Governments. Their attempt involves development of methodology for computation of subsidies across states as reflected from budgetary sources. One important observation they make, ^{which} is quite pertinent and misses the general scrutiny is "The point to note, however, is that even if we take the broadest definition, the share of subsidies accruing to rural areas was much lower than the rural population in every state except Haryana, where the two shares are more or less equivalent" (Mundle and Rao, 1991, pp. 1171-72). The other similar studies are by Ravishankar (1990), P. Asha (1986), Ashok Gulati (1991) and Gulati and Sharma (1991). The methodologies do not differ much across studies but then the approaches and purposes are divergent. Ravishankar's approach is to locate the trends in public spending and investments in Indian agriculture across selected states whereas P. Asha and Gulati directly deal with the quantum of subsidies. Second channel of subsidies is the intervention in product market through public distribution system and pricing policy. Large amount of literature exists on both the aspects and their economic implications. Therefore we excluded these here from the discussion.

There are also direct subsidies given to the farmers in terms of inputs in order to increase the production. Measurement of these do not constitute any difficulty. These subsidies are governed and administered by individual state government at times under the assistance from Central Government. These include subsidies for individual crops, irrigation subsidy, subsidies in the form of supply of inputs like

seeds, fertilizers, pesticides, etc., improved farm equipments like seed drill and other equipments. There is hardly any analysis which deals with these subsidies at state level.

Second group of studies includes analysis of the subsidies as a policy tool. Subsidies are visualized as policy tool for negative taxation. Especially returning a portion of revenue to the society either to boost up the production process or generate employment. Shah (1986) analyses subsidies from this point of view. He looks at it as an essential policy instrument though 'irksome for the economy'. Though in aggregate terms subsidies amount to be transfers there is problem of major part of fertilizer subsidy going to industries. Instead of removal of subsidies he suggests adjustments in taxation. Pani (1991) argues in a diagonally opposite way by questioning the role of Government itself. He does not hesitate to hold the bureaucracy responsible for the lapses in the administration of agricultural policy and thus the role of Government interventions in the policy failures. Minhas (1987), Asha (1987), Khusro (1988) analyse the policy of subsidies based on the experience gathered. Minhas signalled growing instability if subsidies are reduced or eliminated. Asha and Khusro show an in-depth concern about the growing burden of subsidies and their relationship with other macro economic parameters.

Narayana et al (1988) look at the question of subsidies as one of the policy instruments while analysing India's agricultural policy model with the help of General

Equilibrium analysis. They also recognized the increasing burden of subsidies and the strain caused. Parikh and Suryanarayana (1989) worked out the welfare implications of subsidies if they are withdrawn. Dealing with three alternative policy scenarios, they conclude that fertilizer subsidy ^{does} / not increase the welfare of poor. They have suggested a 1/3rd cut in fertilizer subsidy along with investment in irrigation and rural works programme as an unambiguously superior policy combination.

A large discussion both in the press and academic circle followed after the partial withdrawal of fertilizer subsidy. The debate had both sides. Prominent among those who concentrated on the policy issues were Dutta (1991), Sher Singh (1991), Viswanathan (1992), Anant (1992), Dadibhavi and Basavaraju (1992) and Deshpande et al (1992). Those who argued about retention of the policy of subsidies argued that agriculture is a net taxed sector as compared to other countries. The withdrawal of subsidies may have a detrimental impact on the production process. On the other side, the impact of budgetary deficits and IMF conditions provided base for reducing the uneconomic subsidies.

Studies analysing the impact of subsidies at macro level and across states and those dealing with different micro level issues can be grouped together while analysing the issues raised. Gulati (1989) analyses across state distribution of subsidies. From this study the uneven distribution of subsidies across states is very clear. What is most disturbing is that even after recognizing the

inter-state differentials in the distribution of subsidies the policy has not been directed towards equity across states. Gupta (1987) very pointedly indicated the uneven growth across states. Bhatia (1987), Bhattacharya (1989) and P. Asha (1986) have looked into the increasing burden of subsidies and their impact on budgetary resources. Certain studies at macro level also deal with specific problems like subsidies in fertilizers, (Dasai, 1988) and wheat and rice (Gulati, 1987). These studies analyse the macro issues pertaining to individual subsidies. These studies deal with the quantum, distribution and trends in the individual subsidies and also attempt to some extent the composition of beneficiaries.

Impact of subsidies on the distribution aspect has been studied by Sirohi (1984), Patel (1988), Gulati (1990), Jha (1991) and Reddy and Raju (1992). A blanket policy for subsidies has allowed the access to all classes equally. But the benefits mainly accrue to the large and medium farmers sheer because of the size of their input use. Irrigation, fertilizers, credit or electricity all are used in larger proportion by the large land owners. Hence, it is inevitable that the major share of subsidies goes to them. Mukherji (1991) highlighted the political economic aspects and the role of large land holders. A somewhat similar argument is developed about irrigation subsidy by Patel (1988) but in the context of pricing of water. Sirohi (1984) dealt with product market intervention (procurement prices) and their impact on income distribution. Here also, we find that the

farmers with small surpluses are the cause for the resulting distribution, Gulati (1990) looks at the distributional aspect in a different manner. He tries to make out if the cultivator is net subsidized in the process of fertilizer subsidy and comes to the conclusion that the subsidy does not accrue to the producer in the intended proportion. A large part of it goes to industry. One question arises here that whether withdrawal of subsidies would shift the relative position of cultivator? From Gulati's analysis this does not flow directly but Quizon (1985) and Ahluwalia (1991) have specifically addressed to these questions. Interestingly both came to the conclusion that the withdrawal will affect the cultivators and hence should be supported by other welfare measures.

Our review of literature suggests quite a few interesting aspects. Except Ravishankar (1990), Gulati (1989, 1991, 1992) and Parikh and Suryenarayana (1989), not many studies have attempted any detailed analysis of subsidies in the country. Most of the studies concentrated on the fertilizer, irrigation, credit, electricity and food subsidies. None have attempted any analysis of the direct subsidies given to the cultivators under different programmes. Similarly, studies of micro level impact of the subsidies are conspicuously absent possibly due to the difficulty of estimating the quantum of subsidies at individual farmer level. Any attempt of analysing the impact of subsidies at micro level therefore must deal with the direct subsidies given to farmers which

are explicit. Another important issue which can only be sorted out only with the help of a micro analysis is the probable impact of the withdrawal of subsidies. The aggregate level answers to this issue seemed to be far from realities (either too exaggerated or concluding with marginal impact of withdrawal).

1.4 Objectives of the Study

Keeping in view the discussion in the literature and the framework evolved for common studies across the country we set below the objectives for the present study.

1. To quantify level and spread of different types of subsidies in the state and districts and to work out their macro effect on agricultural development.
2. To assess the quantum of subsidies availed, the extent of utilization of subsidized inputs and their impact on different kinds of farmers with respect to asset formation, income generation and employment creation, etc.
3. To study the role of subsidies on input use structure, crop pattern and production pattern on different categories of farms.
4. To study/^{the}usefulness of subsidies on the adoption of modern technology for agricultural production.
5. To study the administration of the disbursement of subsidies and to suggest measures for improving it.

Thus the study is attempted both at macro and micro levels for the State of Maharashtra. Analysis of the impact

of the implicit subsidies like food subsidies, irrigation, fertilizers, credit or electricity is confronted with four major difficulties. Firstly, the proper pricing of inputs as well as food at district level is riddled with difficulties. Sometimes the foodgrains supplied through distribution system do not form the main diet in some of the districts and hence computing subsidized prices as against market prices is difficult. Further the quality of the grains supplied through the fair price shops is never comparable with the quality available in the district market. Such differences get evened out at macro level but are magnified in micro level studies and can distort the results. Secondly, the supply of inputs (especially the channels) is so complex at micro level that at times the cultivators buy fertilizers by ^{either} exchanging foodgrains or swapped with other inputs. Thirdly, the heterogeneity of the composition of inputs affects the factor prices and therefore it becomes difficult to segregate the component of subsidy due to Government policy and the other component which the farmer gained due to better bargaining power (Irrigation water being used by those who do not pay water rates or have wells recharged by canal water). Lastly, it is necessary that any impact study considers either pre- versus post-subsidy OR with and without subsidy approach. In the case of implicit subsidies this seems to be impossible because the policy did not change at the time of field survey. Finding a control group not benefiting out of explicit subsidies is easier but such group with no benefits from implicit subsidies is

impossible in micro level analysis.

1.5 Methodology

The study is attempted at two levels. Firstly, we attempt an analysis of subsidies at macro level with the state level data for Maharashtra. This analysis deals with the districtwise data of explicit subsidies and their inter-relationship with agricultural development across districts. Our micro level analysis is based on the primary data collected from four districts namely, Latur, Ahmednagar, Akola and Nashik. After listing the districts on the basis of different kinds of subsidies for the latest years, one district which is most important with reference to the subsidy on the particular item is selected. Thus Latur is selected for the subsidy on NODP and NPDP, Akola for the special cotton development programme, Nashik for the irrigation sets (sprinkler and drip) and Ahmednagar for special component programme. Blocks from each of these districts were selected in similar manner. A list of beneficiaries under the scheme was obtained from each of the selected block office and 30 beneficiaries were selected randomly out of this list. Twenty non-beneficiaries were selected out of the list made with the help of officials at Block Development Office.

1.6 Scheme of the Study

The study is spread over four chapters. First chapter is introductory in nature and contains a detailed review of literature pertaining to studies on subsidy. Second chapter deals with the analysis of data at State and district level.

This chapter focuses on two aspects viz., the nexus between subsidies and development in the inter-district framework and the distribution of subsidies across region to analyse the impact on regional inequality. Micro level analysis of the four situations is attempted in chapter three. Our aim here is to bring out the differences in impact parameters across size classes and over regions.

Notes

1. The composition of rural migrants to urban cities now includes sizable portion of rural elites.
2. If one works out the energy input-output equation taking energy equivalent inputs and the output again in terms of energy, it would come out easily that with the advent of new technology, the entropy in the process has increased.
3. Fertilizer Statistics in India, Fertilizer Association of India, New Delhi.
4. Arguments about inter-sectoral terms of trade have given rise to the farmers' movement like Shetkari Sanghatana or Ryot Sangha.
5. With the positive slope of cost curve, the subsidies would tend to increase. This would, however, be conditioned by the zone of operation on the production function. If optimum output has already reached (which is not the case with many Indian States) then any additional dose of subsidy would result in uneconomic investments.

CHAPTER II

SUBSIDIES AND AGRICULTURAL DEVELOPMENT

2.1 Introduction

The strategy for agricultural development in India and the related policies which evolved through various programmes need a close scrutiny. It is unbelievable that we do not have a long term policy document as far as agricultural sector is concerned. Most of the times different programmes are taken with some specific objectives. The irony of the situation is that we have programmes which contradict in terms of philosophies and the policy directions undergo significant changes. This unfortunately leads to describing aggregation of programme philosophies under the broader name of policy. Hence it is not surprising that some programmes are altered or dropped altogether either without realising their full potential or due to the large divergence between ex-ante assumptions and ex-post impact. Government intervention in the production process through input incentives is one such policy which came under severe scrutiny in the recent past.

One of the major objectives of the policy of subsidy is to promote equity. But when it comes to the analysis of the impact of this policy on the regional or intra-regional distribution it was noted that fertilizer, irrigation and electricity subsidies have detrimental effect on distribution. (Sirohi, 1984, Gulati, 1992.)

In the present chapter we shall attempt to analyze the inter-regional spread of subsidies across states and its relationship with growth in agricultural production. As a prelude to the micro level analysis attempted in the next chapter here we look into the inter-district spread of direct subsidies. Our focus is to collate the agricultural growth with the levels of subsidies across district. The across state analysis is based on the implicit subsidies on fertilizers, irrigation, power and credit together whereas the same at district level keeps in view the direct subsidies received under different programmes.

Subsidization of inputs at large scale has posed questions about the sustainability of the policy. The large and growing fiscal deficits of the central and state governments is one of the most serious problems facing policy makers. The need for short term fiscal adjustment requires the strictest possible control on the growth of government expenditure, especially the current expenditure. As it is the subsidies together form a sizeable portion of central and state expenditure on agriculture (Ravishankar, 1990). Among the four major constituent fertilizer subsidy constitutes 1.17 per cent of the GDP. Between 1973-74 to 1989-90 the subsidy component on fertilizers increased from Rs. 330 million to Rs. 46.01 million. The major portion of this (about 76 to 44 per cent over years) has gone to fertilizer industries (Gulati, 1992). Similarly,

irrigation, electricity, credit also constitute a sizeable portion in the aggregate subsidies. Table 2.1 gives a relative comparison of these.

The rationale for reduction or removal of subsidies is based on two arguments. The first is a purely budgetary phenomena. Mounting burden of deficits demanded a slash in subsidies and the natural choice was the one which constituted the major share and for which the cut could be handled 'easily'. Second argument is that the subsidies make an enterprise inefficient and hence the removal of incentives would bring back the lost efficiency. While proposing the decontrol of low analysis fertilizers and increase in the prices of others the Finance Minister stated that, "The economic rationale for an increase in the price of fertilizers is so obvious that it does not need to be stated." (GOI, Budget Speech, 1992.) But from Table 2.1 it is evident that singling out fertilizer subsidy as the major burden on the exchequer was not a right step forward. It can be seen from the table that the aggregate subsidies on fertilizers do not constitute the largest proportion of input subsidies. Further, if it is to bring in efficient use of fertilizers, then possibly the assumption that, we have reached the optimum combination on the production possibility curve, or at the peak point on the response surface must be accepted. This is not tenable and therefore the choice of cut in these subsidies does not mean a step forward. The case of fertilizer vis-a-vis irrigation is

TABLE 2.1 : REAL ECONOMIC COSTS OF INPUT SUBSIDIES

(Rs. in millions at 1980-81 prices)					
Year	Fertiliser	Irrigation	Electricity	Credit	Total
1980-81	6592.27	6512.80	3530.19	5954.52	22589.78
1981-82	6219.96	6756.00	3870.40	6827.15	23673.51
1982-83	356.91	6943.30	5187.52	7220.20	19707.93
1983-84	2705.96	7295.60	5760.17	8084.99	23846.72
1984-85	9788.67	8134.10	6906.29	8935.78	33764.84
1985-86	11097.01	10301.00	7945.12	9710.89	39054.03
1986-87	1646.53	12865.10	9369.63	10555.58	34436.84
Total	38407.31 (19.48)	58807.90 (29.84)	42569.32 (21.60)	57289.11 (29.07)	197073.65 (100.00)

Notes : (I) Figures in brackets are percentages to total
 (II) Irrigation Subsidies are for current costs

Source : Gulati; (1989), Ravishankar (1990)

discussed briefly by Gulati (1992) on the background of Parekh and Suryanarayana (1989) and Gulati and Sharma (1990). The argument is 'that the elasticity of foodgrain output to irrigation is much higher than that to fertilizers, and also that the investment in irrigation is more superior to subsidising fertilizers from the point of view of raising foodgrains production.' (Gulati, 1992, p. A.48.) Here it must be noted that irrigation subsidy constitutes the difference between net revenues and recurring costs. Then what are the constituents of these costs? Major constituent of the recurring cost is the administrative/establishment expenses which do not have a direct bearing on the production process. Moreover, when we compute fertilizer and irrigation elasticities separately one must take note of the dependence between the two. Will the elasticities stay same if one of the two inputs is reduced? Therefore, on the whole picking out fertilizer subsidies out of the four could be an erroneous step.

2.2 Regional Spread of Input Subsidies

The pattern of growth in agricultural sector in the post-green revolution era has created chronic regional imbalances. Large portion of the existing regional imbalances has to be attributed to the structural region specific characteristics. But no one can deny the failure of correcting policies in minimizing the regional imbalances in agricultural development. Among the various policy instruments subsidies is considered as the most powerful instrument for

manipulating or balancing the growth across regions and for equitable distribution of resources. It is considered as the vehicle for inter-personal inter-regional and across sector transfer of resources. (Sirohi, 1984.) Therefore it is interesting to note the regional spread of subsidies across states. If the production performances were regionally even and robust to withstand the reduction in the levels of inputs, then there was a case for withdrawal of input subsidies. But what one experiences is the picture of concentration of subsidies across states.

Table 2.2 on the regional spread of subsidies brings out two extremely opposite situations. Firstly, we have the states like Uttar Pradesh, Punjab, Andhra Pradesh, Tamilnadu and Maharashtra which have shared the major portion of the subsidies. Second group consists of the states like Orissa, Assam, Himachal Pradesh, Kerala, West Bengal and Jammu and Kashmir getting the smaller portion of subsidies. The uneven spread can be attributed to the pattern of infrastructural growth, but it cannot be denied that there should have been a deliberate bias to correct such imbalances. Subsidies as a policy tool has tremendous potential as correcting mechanism for regional imbalances. But unfortunately it was used as a blanket policy and the existing imbalances of the agrarian system were allowed to get amplified. Therefore, it would be incorrect to blame it as a failure of subsidy as a policy tool.

Agricultural development and the policy of subsidies

TABLE 2.2 : REGIONAL SPREAD OF SUBSIDIES.

Component	Threshold (In million Rs.)	States falling above the threshold level	States falling below the threshold level
1. Fertiliser Subsidy	Rs. 375	Uttar Pradesh Punjab Andhra Pradesh	Bihar West Bengal Haryana
Range (Rs. 13.60 to Rs. 1594) (Assam) (U.P.)		Tamilnadu Maharashtra Karnataka Gujarat	Madhya Pradesh Rajasthan Kerala Orissa Jammu and Kashmir Himachal Pradesh Assam
2. Irrigation Subsidy	Rs. 3310	Uttar Pradesh Andhra Pradesh Bihar	Tamilnadu Maharashtra Karnataka
(Major and Minor Irrigation Projects)		Rajasthan Punjab Madhya Pradesh Orissa	Gujarat Kerala Assam Jammu and Kashmir
Range (Rs. 5.4 to Rs. 10279) (Himachal Pradesh) (U.P.)		West Bengal Haryana	Himachal Pradesh
3. Electricity Subsidy	Rs. 580	Uttar Pradesh Tamilnadu Maharashtra	Rajasthan Bihar Haryana
Range (Rs. 17.26 to Rs. 1651) (Assam) (U.P.)		Punjab Andhra Pradesh	Gujarat Madhya Pradesh Karnataka West Bengal Orissa Assam
4. Credit Subsidy	Rs. 610	Maharashtra Uttar Pradesh Madhya Pradesh	Punjab Rajasthan West Bengal
Range (Rs. 43 to Rs. 1614) (J & K) (Maharashtra)		Andhra Pradesh Karnataka Tamilnadu Gujarat	Kerala Bihar Haryana Orissa Assam Himachal Pradesh Jammu and Kashmir

Notes : 1. Table is based on the averages of subsidies over 1980-81 to 1986-87 computed on the data from Gulati (1989)

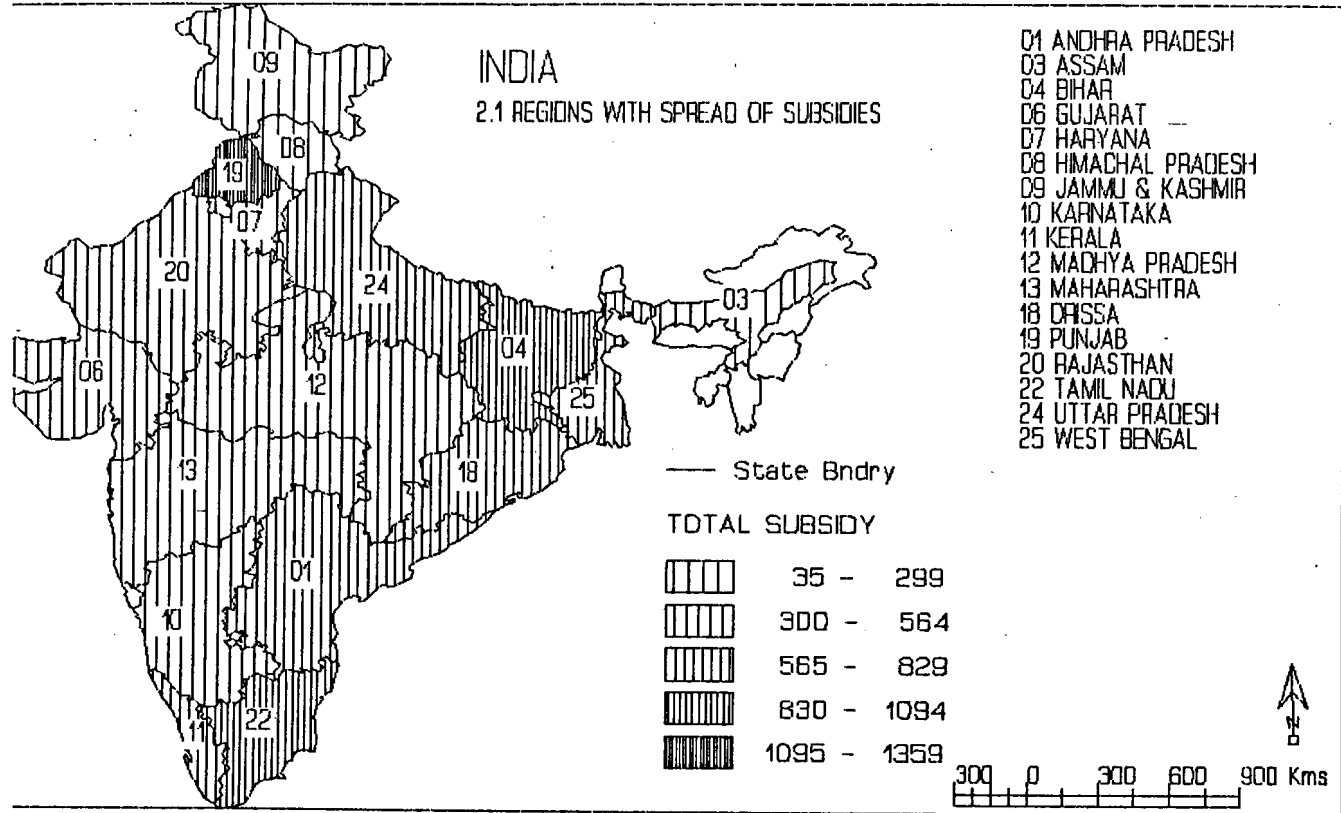
2. Threshold level indicates the median value of the States taken for analysis here.

TABLE 2.3 : CROSS CLASSIFICATION OF STATES ACCORDING TO THE LEVEL OF GROWTH IN FOODGRAINS PRODUCTIVITY AND SUBSIDIES

States classified into two groups according to the average level of subsidy		States classified according to growth rates in productivity of foodgrains (1955-56 to 1987-88)	
		High growth States	Low growth States
1. Fertiliser	Subsidy High Low	UP, Pbj, AP, Kar, Guj Bih, Har	TN, Mah WB, MP, Raj, Ker, Ori, Ass
2. Irrigation	Subsidy High Low	UP, AP, Bih, Puj, Har Kar, Guj	Raj, MP, WB, Ori TN, Mah, Ker, Ass
3. Electricity	Subsidy High Low	UP, Puj, AP Bih, Har, Guj, Kar	TN, Mah Raj, MP, WB, Ori, Ass
4. Credit	Subsidy High Low	UP, AP, Kar, Guj Puj, Bih, Har	Mah, MP, TN Raj, WB, Ker, Ori, Ass

Notes : Codes Used For States : Ass-Assam, Bih-Bihar, Ori-Orissa, WB-West Bengal, Har-Haryana, Pbj-Panjab, UP-Uttar Pradesh, AP-Andhra Pradesh, Kar-Karnataka, Ker-Kerala, TN-Tamilnadu, Guj-Gujrat, MP-Madhya Pradesh, Mah-Maharashtra, Raj-Rajasthan.

Figure 2.1A



- 01 ANDHRA PRADESH
- 03 ASSAM
- 04 BIHAR
- 06 GUJARAT
- 07 HARYANA
- 08 HIMACHAL PRADESH
- 09 JAMMU & KASHMIR
- 10 KARNATAKA
- 11 KERALA
- 12 MADHYA PRADESH
- 13 MAHARASHTRA
- 18 ORISSA
- 19 PUNJAB
- 20 RAJASTHAN
- 22 TAMIL NADU
- 24 UTTAR PRADESH
- 25 WEST BENGAL

Figure 2.1B

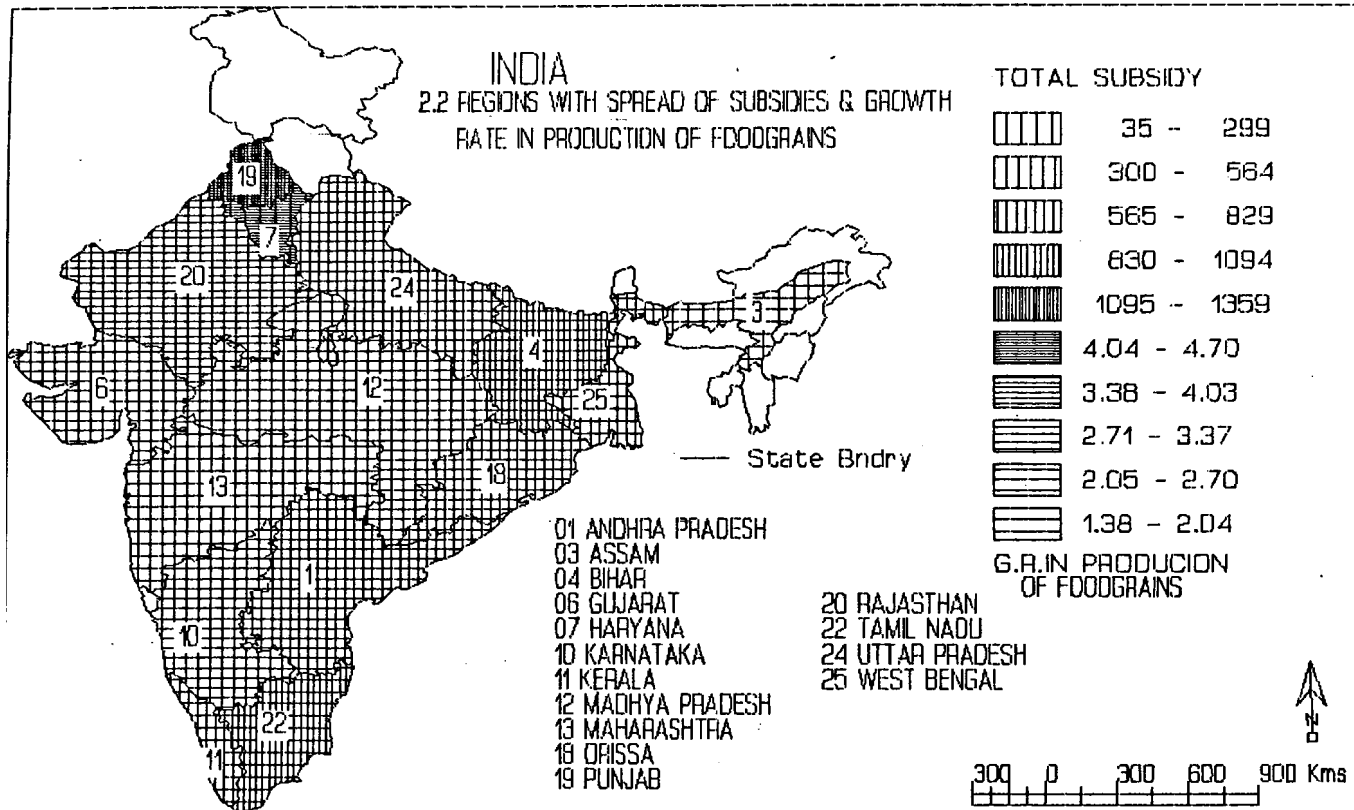
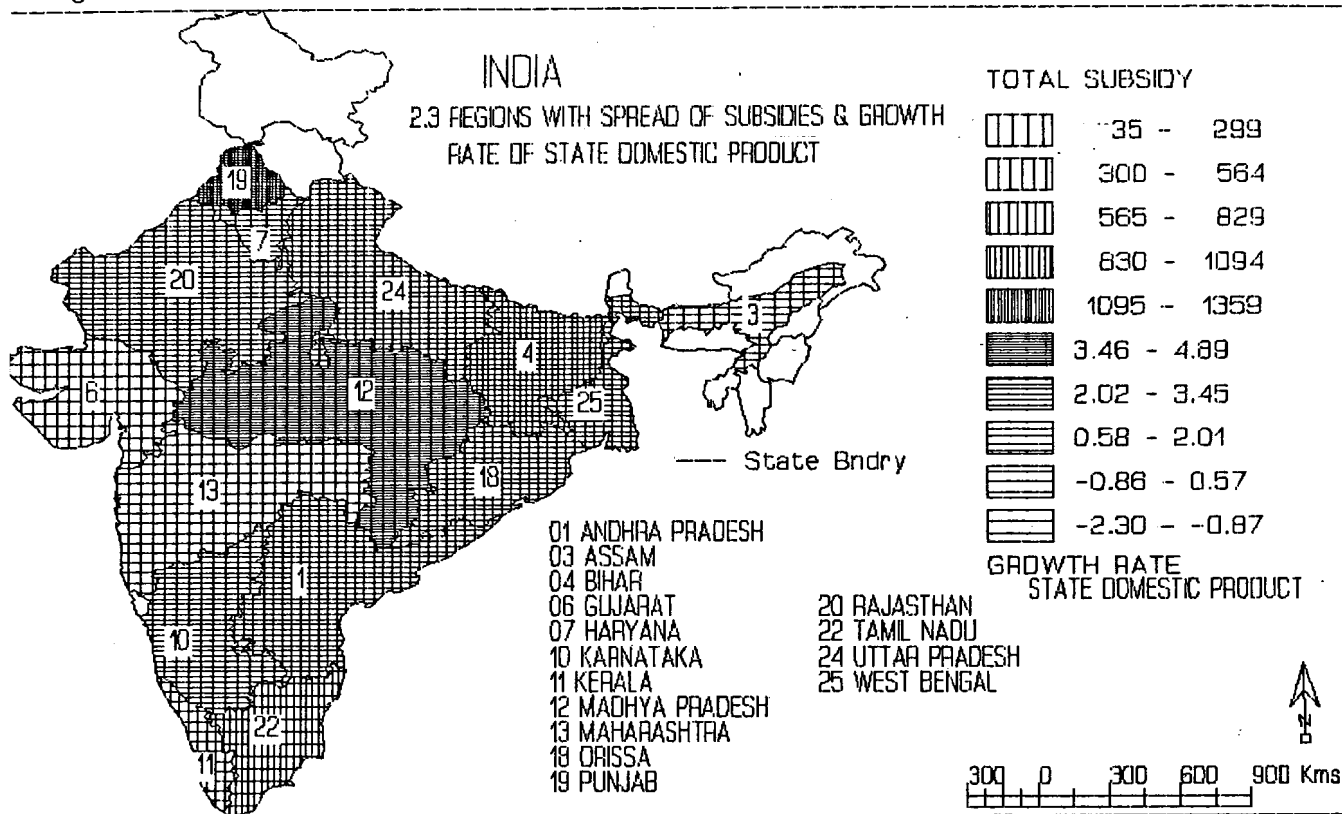


Figure 2.1C



do not have a direct relationship. It is expected that the weaker sections and under-developed regions would derive benefits out of lower input costs in order to maximize their net returns. The product market imperfections inflict an inherent discrimination against these sections. Further the price interventions also do not allow the small producers to realise their optimum levels of profits. Hence some price advantage in factor market will offer them substantial protection. Apart from this, the lower input prices would also enable them to adopt new technology. Keeping this in view we tried to locate the nexus between agricultural growth and levels of subsidies across the states. Instead of taking all the ^{of all crops} Index / index for representing growth, we have taken growth rates in foodgrain yields. Our purpose here is to group the states into four groups, namely

- (i) States with relatively high growth rates in food-grains productivity and receiving larger subsidies.
- (ii) States with relatively high growth rates in food-grains productivity and receiving lower amount of subsidies.
- (iii) States with relatively low growth rates in food-grains productivity and receiving higher amount of subsidies.
- (iv) States with relatively low growth rates in food-grains productivity and receiving lower amount of subsidies.

(a, b, c)
(Figure 2.1/also brings out the four groups distinctly.)

The first group can be understood as the regions where subsidies could be reduced without having detrimental effect on growth. But here withdrawal should be accompanied by product market intervention and matching price policy at state level. These states are in comfortable position in relative sense. The growth-subsidy relationship in the second group needs to be analysed carefully. Even here reduction in the level of subsidies may not have any untoward impact on the growth performance. There is the interesting case of third group which received larger amount of subsidies but recorded relatively lower growth in the interstate comparison. Quite possibly there are the cases where inefficiency crept in the production process due to subsidised inputs. Maharashtra is one consistent member of this group and therefore the impact parameters here need to be understood carefully at micro level. The fourth is the group of states where the policy analysis has to be understood in its full perspective. It is necessary to review three aspects of policy in the case of these states (i) Whether the input growth has been conducive over the past decades? (ii) Are there inefficiencies in the input use structure and how to correct these? (iii) Can subsidy or price intervention act as tools to provide growth impetus? Any step circumventing these questions may lead to detrimental effects.

2.3 Agricultural Development in Maharashtra

In the inter-state comparison, Maharashtra presents a curious situation. In order to understand the dynamics of

growth as well as the role of subsidies in this dynamics it is necessary to review the performance of agricultural sector of the State. Our attempt here is to record the performance of the agricultural sector and then analyse the role of subsidies in order to bring out the important issues in the process. We have attempted here a disaggregated level analysis upto district level.

2.3.1 Maharashtra: The Setting

Deccan plateau is constrained by low and widely fluctuating precipitation, hard rock strata with limited ground water availability, dominance of low density crops in the cropping pattern and meagre irrigation facilities. Hence, it is not surprising that historically this region has been subjected to extremely low key development in agricultural sector. Droughts and resulting famines were quite frequent in the region (GOI, 1973). The region also reflects wide intra-regional variations both due to access to resource and their economic use. Keeping in view these constraints, it is not very unexpected that parts of Maharashtra, Madhya Pradesh, Karnataka and Gujarat depict a typically depressed agricultural sector. Agricultural development after independence has been conditioned by many factors and forces that prevailed earlier and in fact quite often one sees the reinforcement of some of them. It may be argued here that performance of Indian agriculture throughout the 20th century can be characterized as one of change and continuity. The case of Maharashtra agriculture is no different

compared with other regions of the country is not extremely different than that of pre-independence India. Bhatia (1988) observed that the eastern and western regions are the lagging regions in productivity growth (Bhatia, 1988). It was also pointed out in the same study that between 1962-65 and 1978-81, eleven out of the seventeen states had growth rates below the national average. Maharashtra is one of these. Hence, comparing the overall performance of the state with other parts of the country suggests a less than average growth in agriculture sector. As indicated initially the state has certain predominant constraints which existed even during the pre-independence phase. Firstly, the state has a vast region falling under drought-prone areas with average rainfall less than 750 mm (GOM, 1973). Secondly, the state has less than even 20 per cent of area under irrigation and this is concentrated in sporadic pockets (GOM, 1988). Thirdly, as a consequence of these, the cropping pattern is dominated by low density cereal crops, where the present level of technology cannot offer substantial yield improvement. Fourthly, the technological change of mid-sixties favoured only a few pockets in the state and in the absence of competent dry land technology, the other regions lagged behind. Lastly, the agrarian structure is characterized by concentration of small holdings in the regions which have favourable natural resource structure for the new technology but lack of cash resources and large holdings dominate the areas with a few technological

options along with consistent drought-prone behaviour.

Maharashtra has a peculiar physiographic configuration. The land and topography of the state is very undulating and characterized by barren rocky hills, ridges, and waste lands. Western coast of the state can be divided into two zones. One with high rainfall region and the other as assured rainfall zone (transition zone) falling on the eastern slopes of Sahyadri hills. The Konkan strip between the Arabian sea and western ghats receive maximum rainfall ranging between 5000 mm and 7500 mm. The area falling between eastern side of western ghats and central Maharashtra receives rainfall between 400 mm and 750 mm. The eastern and some portions of northern Maharashtra receive rainfall of more than 1000 mm per year. Considering this the state can be broadly divided into 3 major agro-climatic zones, (GOM, 1983) viz., (i) High rainfall area of Konkan strip and the neighbouring transition zone; (ii) Chronically drought affected area of Deccan plateau; and (iii) Moderate and assured rainfall regions of eastern Maharashtra.

As an initial exercise, we classified the districts of Maharashtra according to their level of annual rainfall and coefficient of variation in annual rainfall. Table 2.4 presents the cross classification of districts. The table shows six groups of districts of the state. Each of the groups represents a distinct situation as far as climatic constraints are concerned. The upper diagonal group

Table 2.4 : Districts Classified According to Level and Variability of Annual Rainfall

Variability (CV)	Normal Rainfall Ranges		
	Below 750 mm	750 to 1000 mm	Above 1000 mm
Above 25 per cent	Beed, Aurangabad, Ahmednagar, Sholapur, Dhule, Jalna	Wardha, Parbhani, Akola	Nagpur, Yeotmal, Pune
Below 25 per cent	Sangli, Jalgaon	Latur, Kolhapur, Osmanabad, Wanded, Buldhana, Satara, Amaravati	Gadchiroli, Nashik, Sindhudurg, Thane, Raigad, Bhandara, Chandrapur, Ratnagiri

consisting of Beed, Aurangabad, Ahmednagar, Sholapur, Dhule, Jalna, Sangli, Jalgaon, Wardha, Parbhani and Akola represents a climatically hazard-prone area. The experience of droughts in the state also corroborates this view. The other three groups are relatively free of these constraints and hence have larger potential for development.

The Directorate of Agriculture, uses the classification of rainfall zones used by the National Commission of Agriculture. The classification takes into consideration two aspects namely (i) monthly distribution of rainfall, (ii) their quantum. The state is divided into 16 agro-climatic (rainfall) zones on this basis (GOM, 1989). These rainfall zones match with the classification we have resorted to if we club two or three rainfall zones in certain cases. However, it is necessary that the rainfall zones (or agro-climatic

zones) take into consideration not only the normal quantum and spread but also the level of variation across years. This gives us information about the vulnerability of agricultural sector in the region.

11.3.2 Land Use Pattern and Development of Irrigation

Maharashtra being a state with major soil climatic constraints has a cereal dominant crop pattern. But this pattern involves more of coarse cereals unlike other states. Broadly, we find seven types of dominant cropping pattern (GOI, 1976) prevailing in the state across different districts namely :

1. Rabbi jowar, bajra, pulses, cotton.
2. Kharif jowar, bajra, oilseeds, pulses.
3. Kharif jowar, cotton, pulses.
4. Paddy, ragi, jowar, and millets.
5. Kharif jowar, wheat, groundnut, horticultural crops.
6. Kharif jowar, wheat and horticultural crops.
7. Kharif jowar, groundnut or oilseeds and pulses.

Though these are just broad indications of the cropping pattern, there are districts with large number of crops and crop combinations. The state level cropping pattern is presented in Table 2.5. It may be noted that jowar and bajra together share about 40 per cent of the gross cropped area, followed by cotton, paddy, pulses and wheat. Sugar-cane is an economically important crop in Maharashtra, though its area share is only about 2 per cent.

Table 2.5 : Cropping and Irrigation Pattern of Principal Crops : Maharashtra

Sr. Crops No.	Proportion of Area Under Crop		Proportion of Irrigated Area	
	Triennium	Centred at	Triennium	Centred at
	1970-71	1983-84	1970-71	1983-84
1. Rice	6.9	7.5	23.1	24.4
2. Jowar	29.4	32.2	4.6	5.9
3. Bajra	10.5	8.9	2.9	2.7
4. Wheat	4.2	5.8	33.9	54.9
5. Maize	0.2	0.4	35.9	60.8
6. Total Cereals	53.3	57.2	9.0	12.9
7. Tur	3.2	3.6	-	-
8. Gram	1.6	2.4	14.9	22.8
9. Total pulses	13.2	14.6	2.0	3.9
10. Total foodgrains	66.5	71.8	7.6	11.1
11. Cotton	14.2	13.2	2.6	3.9
12. Sugarcane	1.0	1.8	99.9	100.0
13. Groundnut	4.7	3.0	2.4	4.4

Source : Based on the data collected from the office of the Director of Agriculture, Government of Maharashtra, Pune

As regards the distribution of irrigated area we noted that cereals control the larger proportion of area irrigated. Among them wheat, paddy and jowar have almost equal share of the total net irrigated area. During the decade, wheat, maize and gram have substantial improvement in irrigation area. Only about 1 per cent of additional area was brought under irrigation in case of jowar.

The land utilization and irrigation pattern across crops indicates negligible changes during the decade. Jowar has gained in terms of area share at the cost of bajra, other millets and cotton. Wheat economy of the state has improved both in terms of area and other resources share. Surprisingly the emphasis on non-foodgrains has declined substantially.

Table 2.6 presents the development of irrigation potential through plan periods.

It may be noted that a systematic development of irrigation began with a meagre investment of about Rs. 8 crores and the creation of 0.40 lakh hectares of irrigation potentials. During the sixth plan the investment reached to Rs. 1335 crores with a creation of additional potential of 5.5 lakh hectares. During the period ending April 1980, 14 major, 105 medium (including 5 major and 15 medium projects of pre-plan), 1091 state sector minor irrigation and 340 lift irrigation schemes were completed. Fifty major, 116 medium and 357 minor irrigation projects were under construction.

Table 2.6 : Development of Irrigation Potential Through Plan Periods in Maharashtra

Sr. Period No.	Irrigation Potential Created (Lakh ha.)	
	During the Plan Period	Cumulative
1. Pre-Plan 1951	2.74	2.74
2. First Five Year Plan (1951-56)	0.40	3.14
3. Plan Periods (1956-80)	14.06	17.20
4. Sixth Plan (1980-85)	5.50	22.70
5. Seventh Plan (1985-90)	4.05	26.75
6. Annual Plan (1990-91)	0.64	27.39
7. Annual Plans (1991-93) (Targeted)	1.49	28.88
8. Eighth Plan (1992-97)	5.44	34.32

Sources : (i) Development of Irrigation, Maharashtra State, Government of Maharashtra, Directorate of Irrigation Research and Development, Pune, 1989.

(ii) Government of Maharashtra (1992), Eighth Five Year Plan, Part I.

The proportion of gross area irrigated has doubled over the last quarter century with some improvement in the irrigation intensity. The double cropped area however, did not grow at the expected rate, but then in Maharashtra, sugarcane consumes large quantity of water and irrigated area under annual crops is only counted once while arriving at

irrigation intensity. The water distribution among crops and extension of sugarcane have always been a live issue for discussion. Moreover, with the limited ultimate potential of irrigation, the state has to depend more on the rainfed crops utilizing the available water resources to the optimum capacity.

2.3.3 Growth of the Crop Economy

The experience of growth in crop economy in the state is heterogeneous. It was noted from Bhalla and Alagh (1979) that majority of the districts of the state have negative growth rates. Stagnant agriculture was a characteristic of the state till mid-seventies. The performance of a crop economy can be categorized into 4 phases. The first phase was that of slight growth (more or less stagnancy) till 1964-65. Between 1964-65 and 1972-73 was a period of stagnation and depressive for the agricultural sector of the state. During these eight years the state has faced two severe droughts, each lasting for consecutively two years. The period after 1973-74 till 1984-85 was a period of growth where rates were quite impressive for the major crops.

Table 2.7 presents the sub-periodwise growth rates in area, production and yield per hectare of principal crops of the state. It is evident from the table that the rates of growth are impressive in the new technology phase. Among the crops pulses and groundnut showed consistently negative or non-significant rates of growth, whereas maize, wheat

TABLE 2.7 : SUB-PERIODWISE RATES OF GROWTH IN AREA, PRODUCTION AND YIELD OF PRINCIPAL CROPS. MAHARASHTRA STATE

SR. Crops NO.	AREA			PRODUCTION			YIELD PER HECTARE		
	I	II	III	I	II	III	I	II	III
1. Rice	0.79 **	1.63 ns	0.87 ***	1.60 ***	4.13 ns	2.45 ***	0.49 ns	-1.43 ns	1.70 ***
2. Wheat	0.85 ns	2.08 **	1.35 ***	3.79 **	1.03 **	5.16 ***	1.34 ns	2.82 **	3.26 ***
3. Kh Jowar	-0.08 ns	1.91 ns	0.81 ns	-2.78 ***	9.18 ns	2.75 ns	0.03 **	7.51 ns	2.98 ns
4. Rb Jowar	0.23 *	1.14 **	0.08 ***	-3.32 ns	3.19 **	-0.43 **	-3.83 ns	2.05 **	0.01 **
5. Total Jowar	0.22 ns	1.49 **	0.42 ns	-0.08 *	8.05 ns	1.91 **	-0.52 ***	6.60 **	1.40 ***
6. Bajra	0.11 ***	-5.12 ***	-0.33 ***	1.42 ***	-2.23 ***	1.43 ***	1.33 ***	3.77 **	1.74 ***
7. Maize	4.44 ***	5.22 **	3.54 ***	7.53 ns	13.56 ***	8.48 ***	1.35 ns	9.39 ***	4.84 ***
8. Total Cereals	0.28 ***	0.63 *	0.41 ns	0.78 ns	5.18 ns	2.13 ns	0.17 ns	4.55 ns	1.66 ns
9. Gram	-1.04 **	2.30 **	-0.26 ***	-0.86 ***	1.83 ns	0.06 **	-0.13 ***	-0.52 ns	0.30 ***
10. Tur	0.43 ns	1.50 ns	0.68 ***	-1.76 ns	1.46 ns	-0.86 ns	-2.94 ***	-0.15 ns	-1.58 *
11. Total Pulses	0.34 ***	-0.46 **	0.54 ***	-0.66 ns	-1.25 **	0.04 ***	-1.63 ns	-0.75 **	-0.53 ***
12. Total Foodgrains	0.29 ns	0.41 ns	0.43 ns	0.58 ns	4.48 ns	1.86 ns	-0.07 ns	4.08 ns	1.36 ns
13. Cotton	0.03 ***	1.68 **	-0.13 ***	0.16 ***	2.87 *	0.35 ***	-0.20 ns	1.33 **	0.46 ***
14. Sugarcane	4.58 ***	4.09 ns	4.56 ***	4.88 ns	4.60 *	5.03 **	0.16 ns	4.28 ns	1.07 ns
15. Groundnut	-0.04	-1.39	-1.21	-1.01	-3.79	-1.14	-0.05	-2.48	0.09

Note : 1. I period from 1951-52 to 1971-72 ; II period from 1973-74 to 1980-81 and III period from 1951-52 to 1980-81.
 2. For Kharif and Rubi Jowar the sub-period begin at 1956-57 instead of 1951-52.
 Other years are same as above.
 3. *, ** and *** indicate level of significance at 10, 5 and 1 per cent respectively.

and sugarcane recorded relatively higher rates of growth for both the sub-periods.

In the first sub-period maize, sugarcane, wheat, rice and bajra have shown higher rates of growth in production among crops. Poor performance of jowar (major crop of the state), total cereals, total pulses, foodgrains, cotton and groundnut is quite conspicuous. It may be noted that except bajra all the other crops showing higher growth rates are high value crops, and most of the non-performing crops except cotton and groundnut, are major subsistence crops.

The picture, however, undergoes a change when we look at the growth rates in production of crops during second sub-period. Except for a few crops, the growth rates in production of crops in second sub-period is higher than those of the first period. Particularly, maize, sugarcane, total jowar, total cereals, and total foodgrains have recorded high rates of growth compared to other crops. The growth rates in yield of kharif and rabbi jowar, maize, bajra and sugarcane are unprecedented high compared to the earlier sub-period. Tapering of the production growth rates is evident for bajra, wheat, groundnut and total pulses for the state. It is important to note here that the growth in production of the crops came through area augmentation in the first sub-period, whereas productivity growth contributed major share in the production growth in post 1973-74 period.

In order to trace the sources of growth across sub-

periods, we have used the decomposition of the growth following Vidya Sagar (1980). The results are presented in Table 2.8.

Table 2.8 : Decomposition of Agricultural Production :
Maharashtra State

Sr. Source of Growth No.	1951-54 to 1973-76	1973-76 to 1977-80	1951-54 to 1977-80
1. Area Effect	22.7	17.5	14.0
2. Yield Effect	47.6	57.4	45.2
3. Cropping Pattern Effect	26.9	20.4	30.2
4. Interaction Effect	2.8	4.6	10.6

It may be noted that yield effect dominates the other two in both the sub-periods, however, it comes in bold relief only during 1973-76 to 1977-80. The cropping pattern effect contributed a higher share during the first sub-period compared to the second. The analysis of growth rates in production along with area and yield growth rates reveal that growth in yield per hectare contributed major share to the production of rabbi jowar, kharif jowar, maize, bajra, total cereals, and consequently total foodgrains. One interesting point that emerges from the analysis of the growth rates attained in the second sub-period and the growth rates for three decades as a whole; is that even unirrigated crops also recorded impressive rates of growth comparable even to the

irrigated crops. This observation goes along the lines of the earlier observation by Desai and Namboodri (1983), though in a different context.

Another side of the analysis of growth pattern is the analysis of the components causing stagnation or decline in production growth. The non-drought-prone districts have benefited more due to area augmentation than the drought-prone districts. Among the drought-prone districts growth in yield cause stagnation/decline/in area growth arrested the pace of production growth for gram, cotton, bajra and kharif jowar. Stagnation in some of the non-drought-prone districts is more due to stagnation or decline in productivity levels.

The initiative obtained in the past 1973-74 period was extremely helpful for the vast rainfed areas of the state. It was quite commendable that the achievement of this growth potential was not due to any large increase in irrigation. Mainly the rainfed areas contributed to the stepped up growth. The last decade spanning 1978-79 to 1989-90 was marked more by change in the composition of the structure of growth rather than any significant step up in them. Unlike the earlier two decades, eighties did not experience a drought of the severity of 1966 or 1972. During this decade, no substantial improvement was noted in irrigation. The main emphasis was however, on dry land agriculture through an extensive programme of Comprehensive Watershed Development (COWDEP).
 / for a rabi jowar, tur, pulses and groundnut; whereas
 stagnation/decline

The composition of the growth performance across groups can be observed from Table 2.9. Foodgrain production has increased by a meagre weight of 0.88 per cent per annum on the background of 1.86 per cent during the earlier three decades and 4.48 per cent of 1973-80. This substantial drop in the growth rate was not so much due to area but the productivity has come down drastically from 4.08 per cent to 1.6 per cent per annum.

Table 2.9 : Rates of Growth in Area, Production and Yield Per Hectare for Crop Groups - Maharashtra State (1978-79 to 1989-90)

Crop Groups	Area	Production	Yield per Hectare
Total Cereals	-0.137	0.350	0.486
Total Pulses	1.526***	4.912***	3.337***
Total Foodgrains	0.212	0.878	1.608

Note : *** - Significant at 1 per cent level.

Source : Based on the data collected from Directorate of Agriculture, Government of Maharashtra, Pune.

As noted earlier, we can also observe that the earlier three decades and especially the period between 1973-81 has seen growth generating from total cereals as crop group. The gains were substantial in jowar, maize and wheat. The decade of eighties however, witnessed a substantial drop in the rates of growth of these leading crops, though the

levels of production and productivity were more or less maintained at the same level as those in earlier decade.

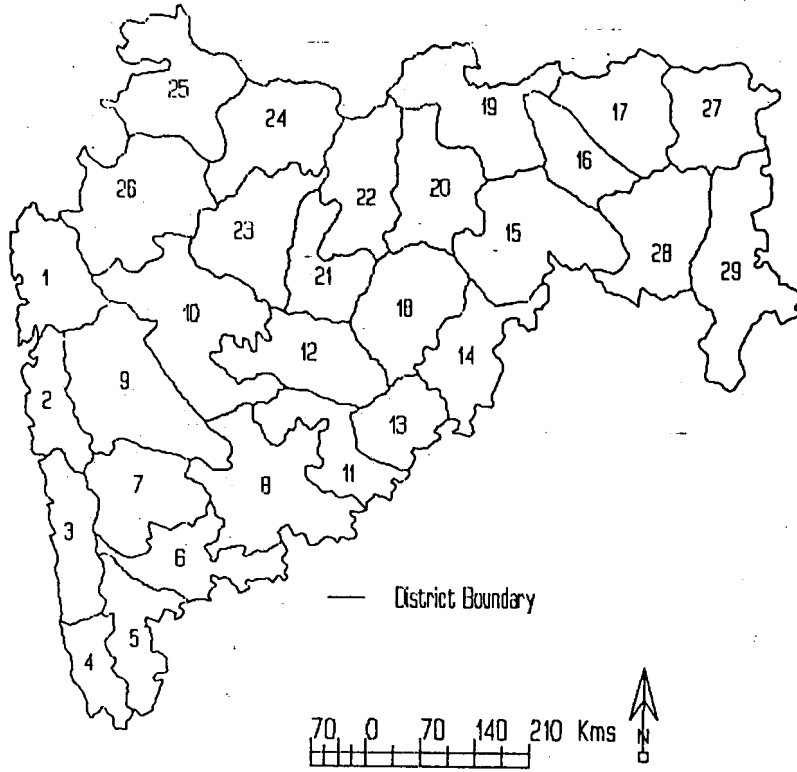
An interesting turn to the growth behaviour can be observed in the last decade. Pulses, hitherto neglected crop, showed an unimaginable resilience to get back to a growth path comparable with other food crops. In fact, large part of the foodgrain growth was contributed by pulses through improvement in productivity. The growth was more from Vidarbha region of Maharashtra compared to the other three divisions.

The regional patterns in the growth performances in the productivity (yield) of total cereals, total pulses and total foodgrains during the period 1978-79 to 1989-90 are presented in the maps (Fig. 2.2, 2.3 and 2.4). We have grouped the districts into four groups keeping in view the level of significance and sign of growth rates obtained. The first group having positive and significant growth rates could be termed as the districts with relatively good performance in the case of the crops. The second and the third group represent, those districts which do not show any trend in their performance with respect to the crop and the last group shows a conclusive decline.

It can be observed from the figures that the Akola, Sindhudurg, Ratnagiri, Satara and Kolhapur showed a remarkably good performance in terms of production of foodgrains. There were districts which showed conclusively declining trends but

Figure No. 2.2

MAHARASHTRA



DISTRICT NAMES :

- | | |
|----------------|-----------------|
| 1. THANE | 28. CHANDRAPUR |
| 2. ALIBAG | 29. GARHCHIROLI |
| 3. RATNAGIRI | |
| 4. SINDUDURG | |
| 5. KOLHAPUR | |
| 6. SANGLI | |
| 7. SATARA | |
| 8. SOLAPUR | |
| 9. PUNE | |
| 10. AHMEDNAGAR | |
| 11. OSMANABAD | |
| 12. BID | |
| 13. LATUR | |
| 14. NANDED | |
| 15. YAVATMAL | |
| 16. WARDHA | |
| 17. NAGPUR | |
| 18. PARBHANI | |
| 19. AMRAVATI | |
| 20. AKOLA | |
| 21. JALNA | |
| 22. BULDANA | |
| 23. AURANGABAD | |
| 24. JALGAON | |
| 25. DHULE | |
| 26. NASIK | |
| 27. BHANDARA | |

Figure No.2.3

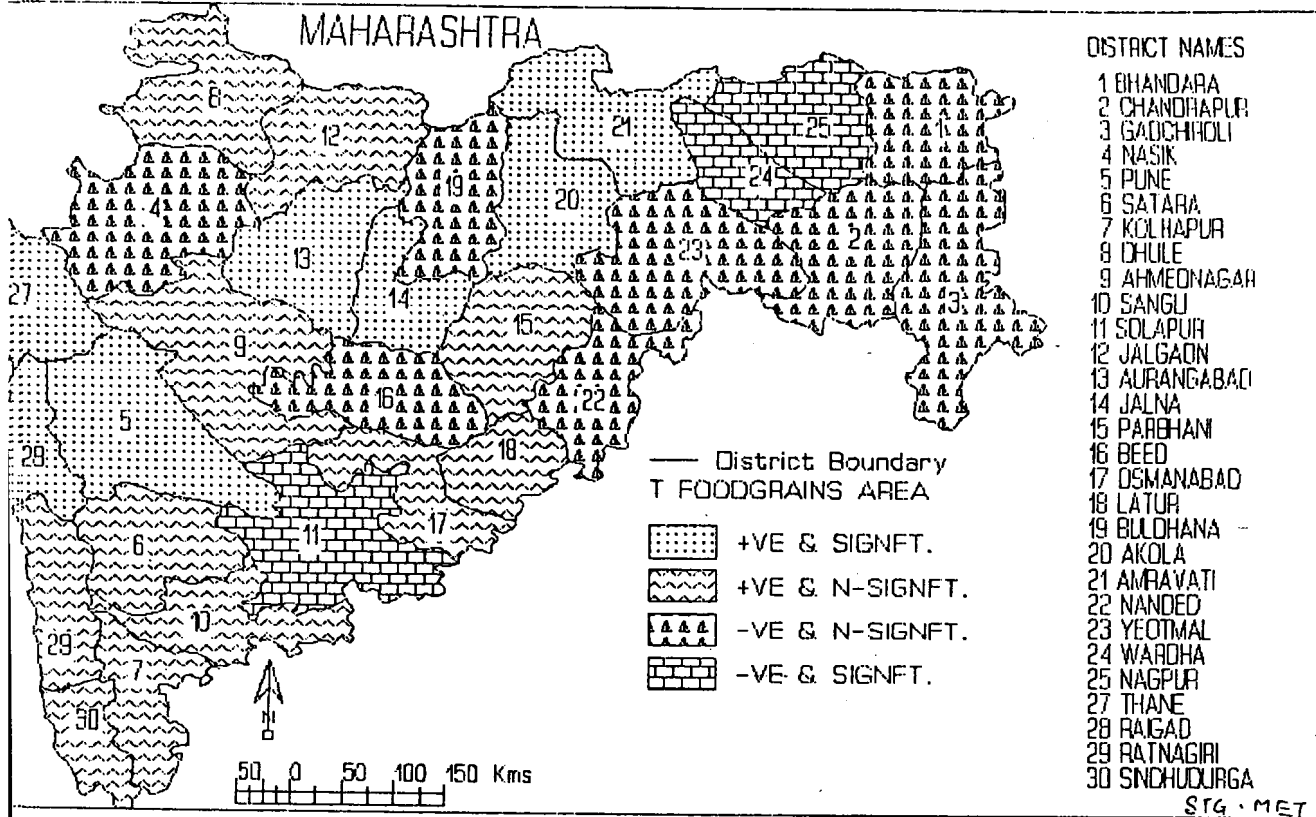


Figure No.2.4

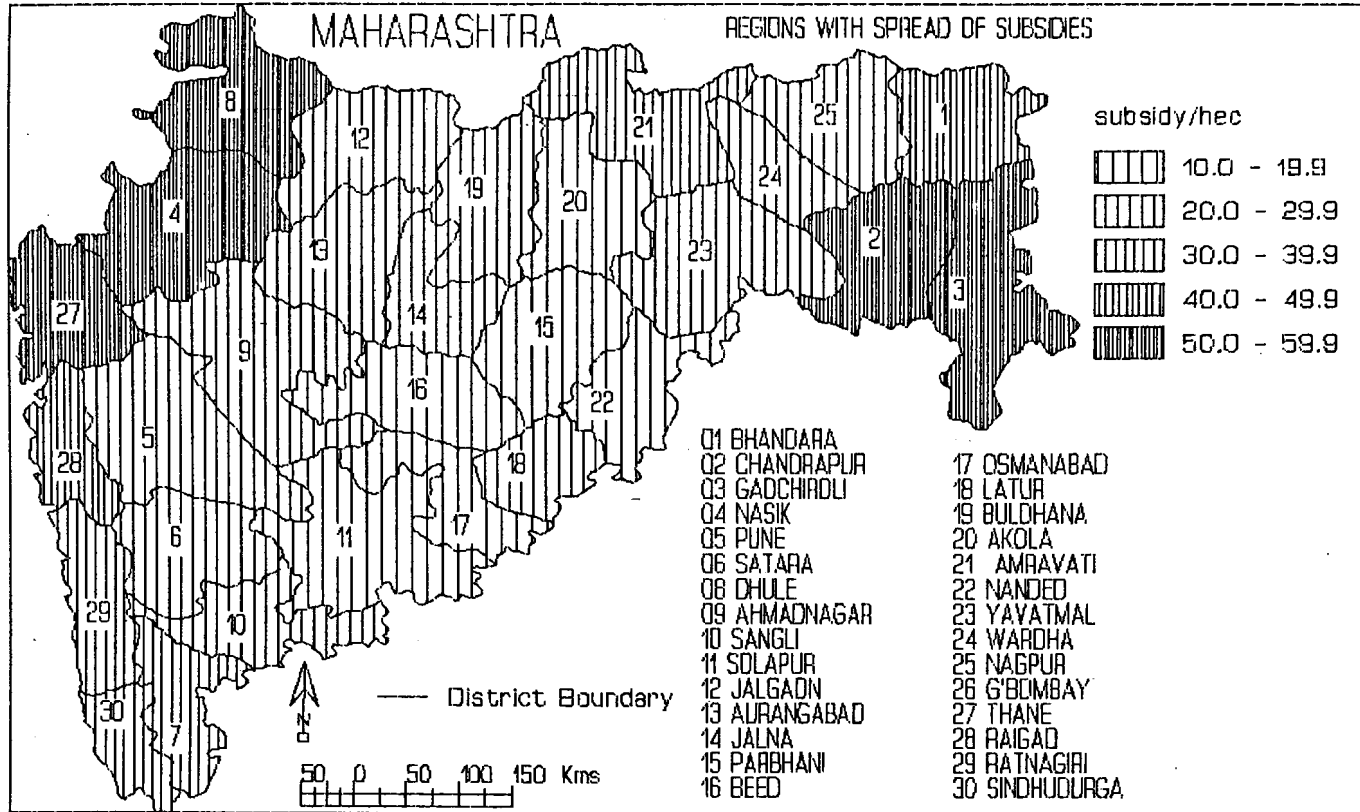


Figure No.2.5

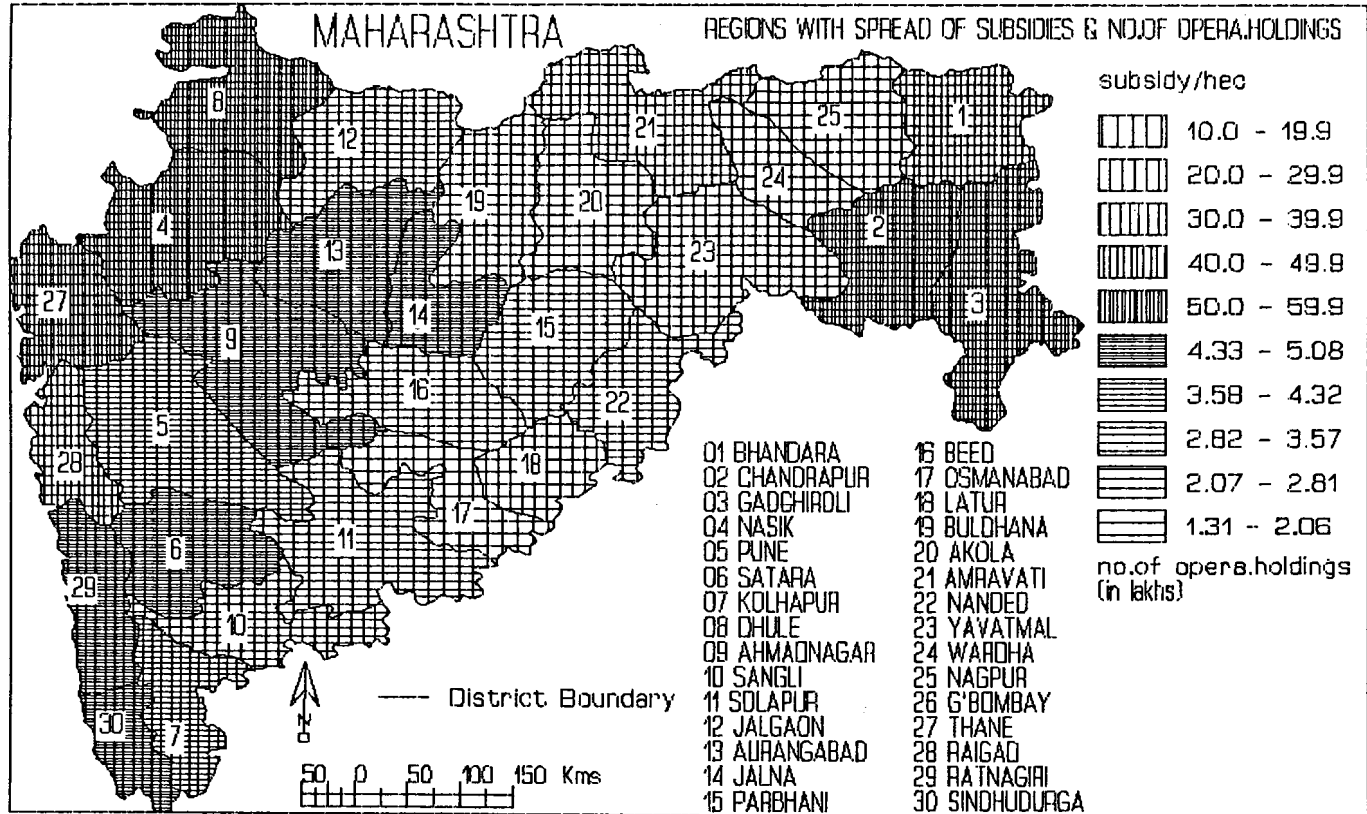


Figure No.2.6

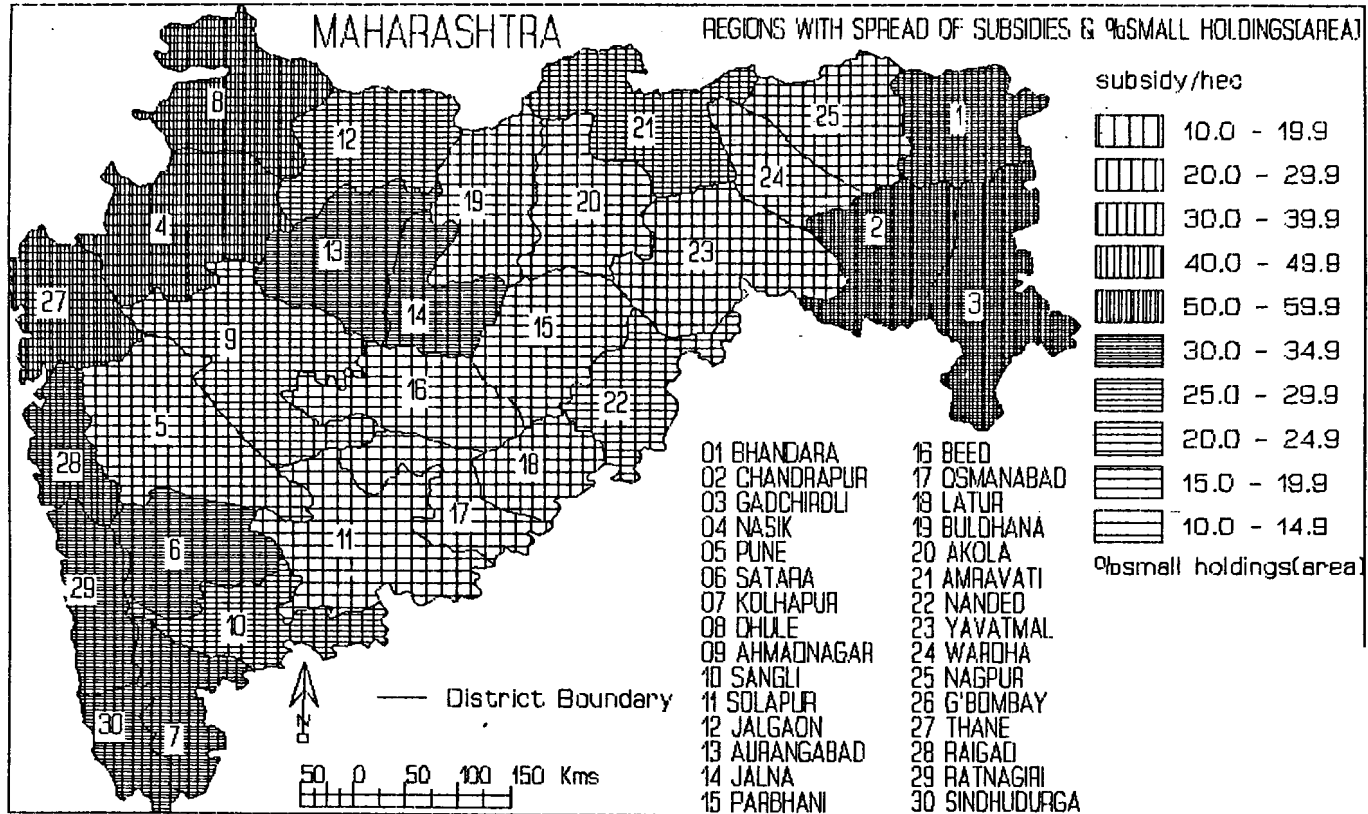


Figure No.2.7

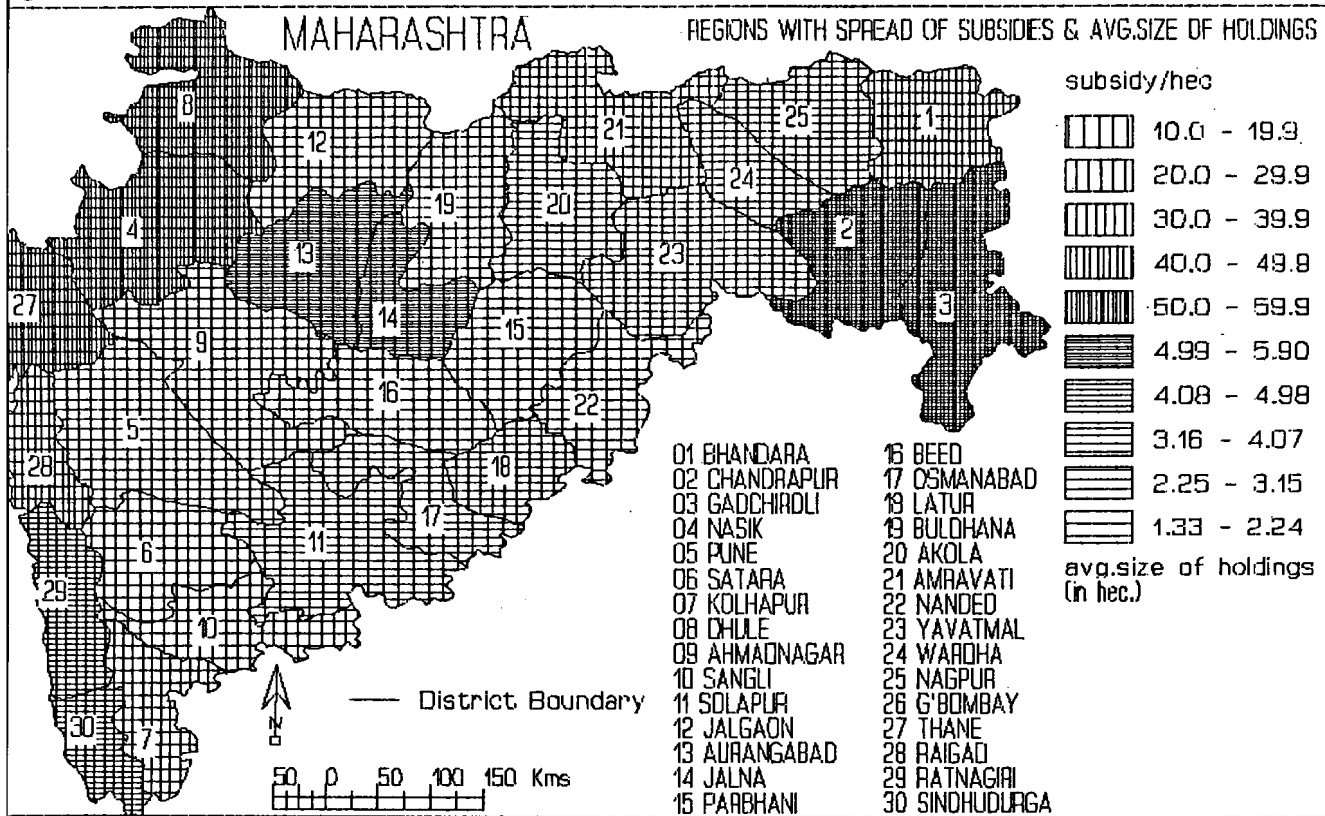


Figure No.2.8

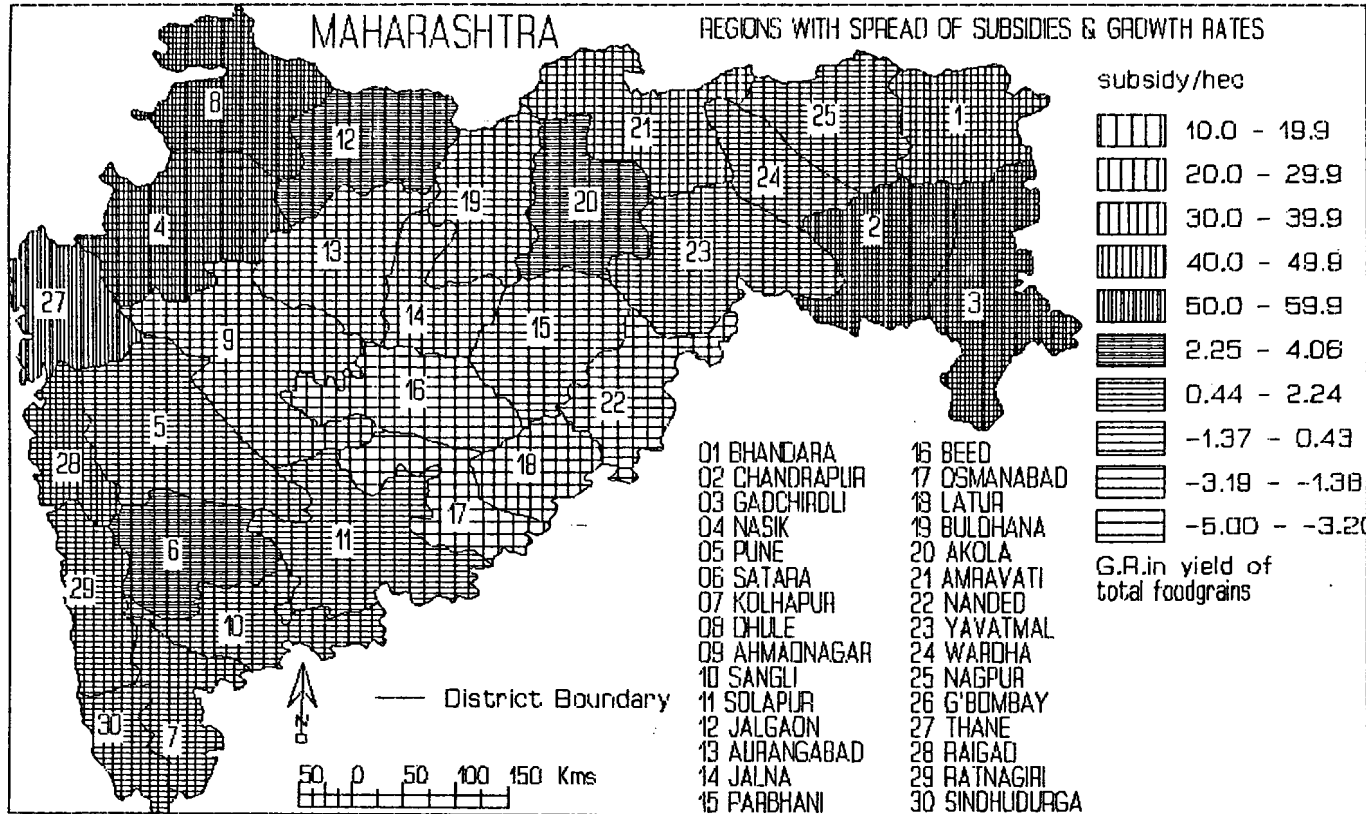


Figure No.2.9

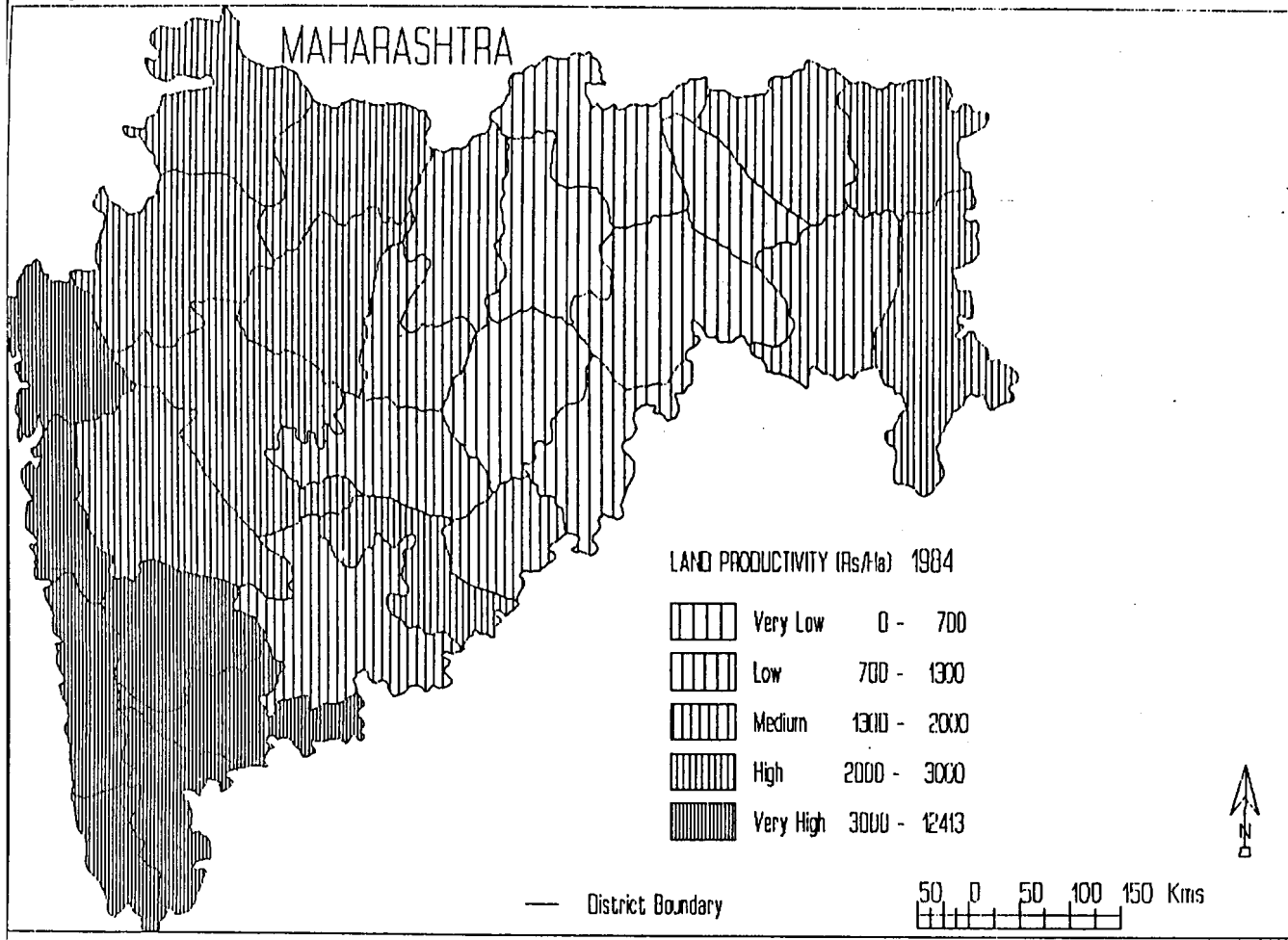


Figure No.2.10

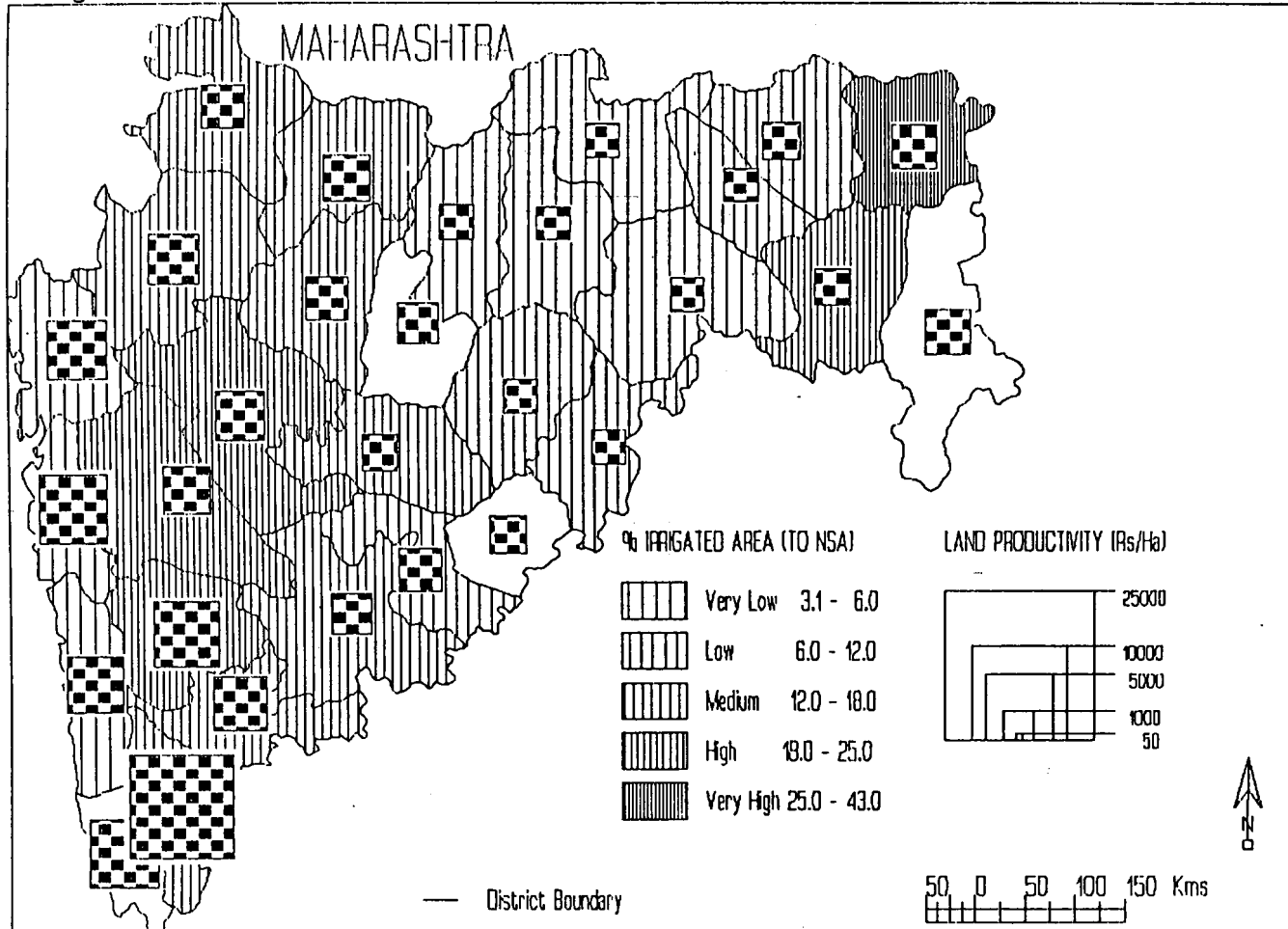


Figure No.2.11

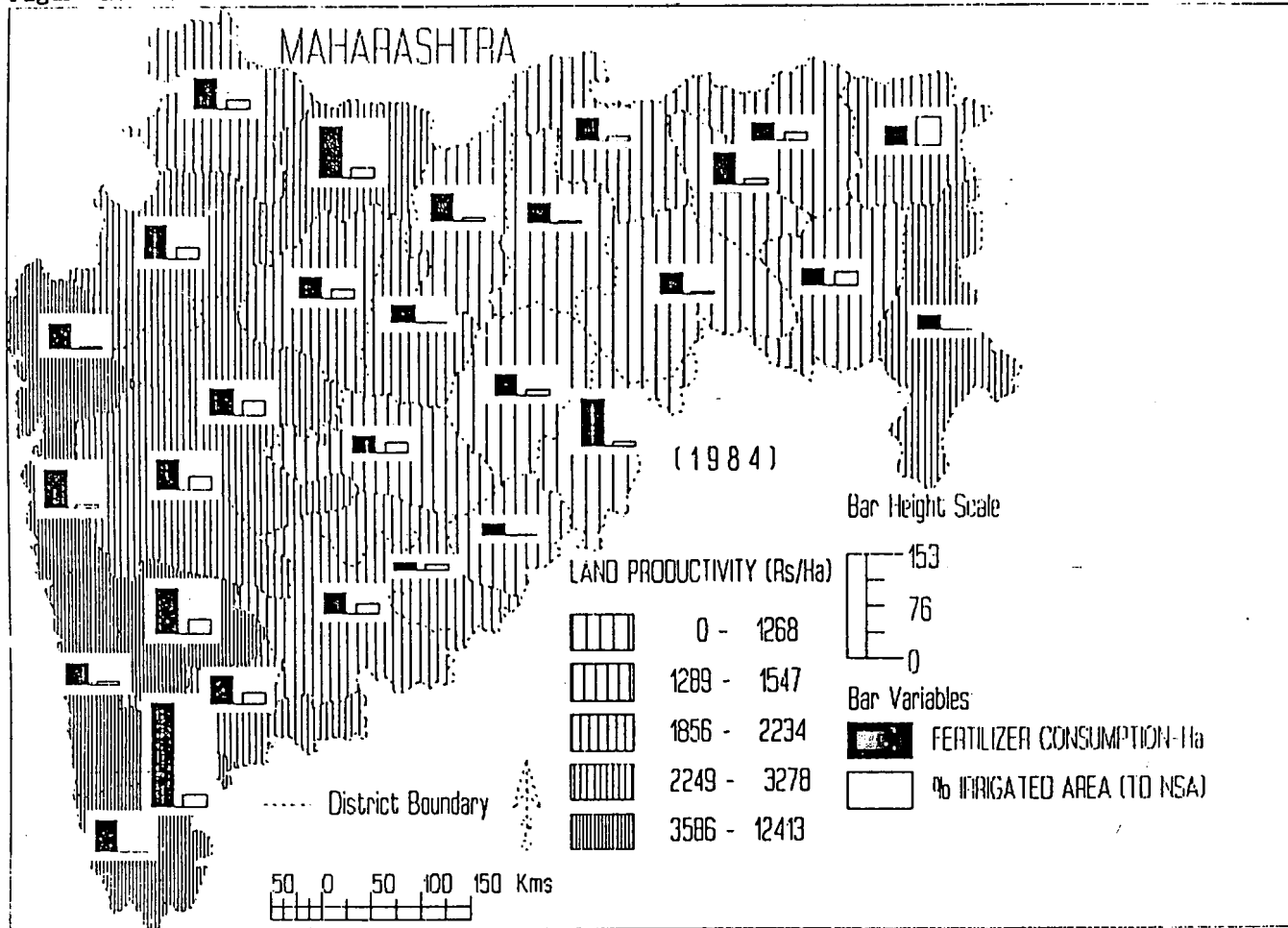
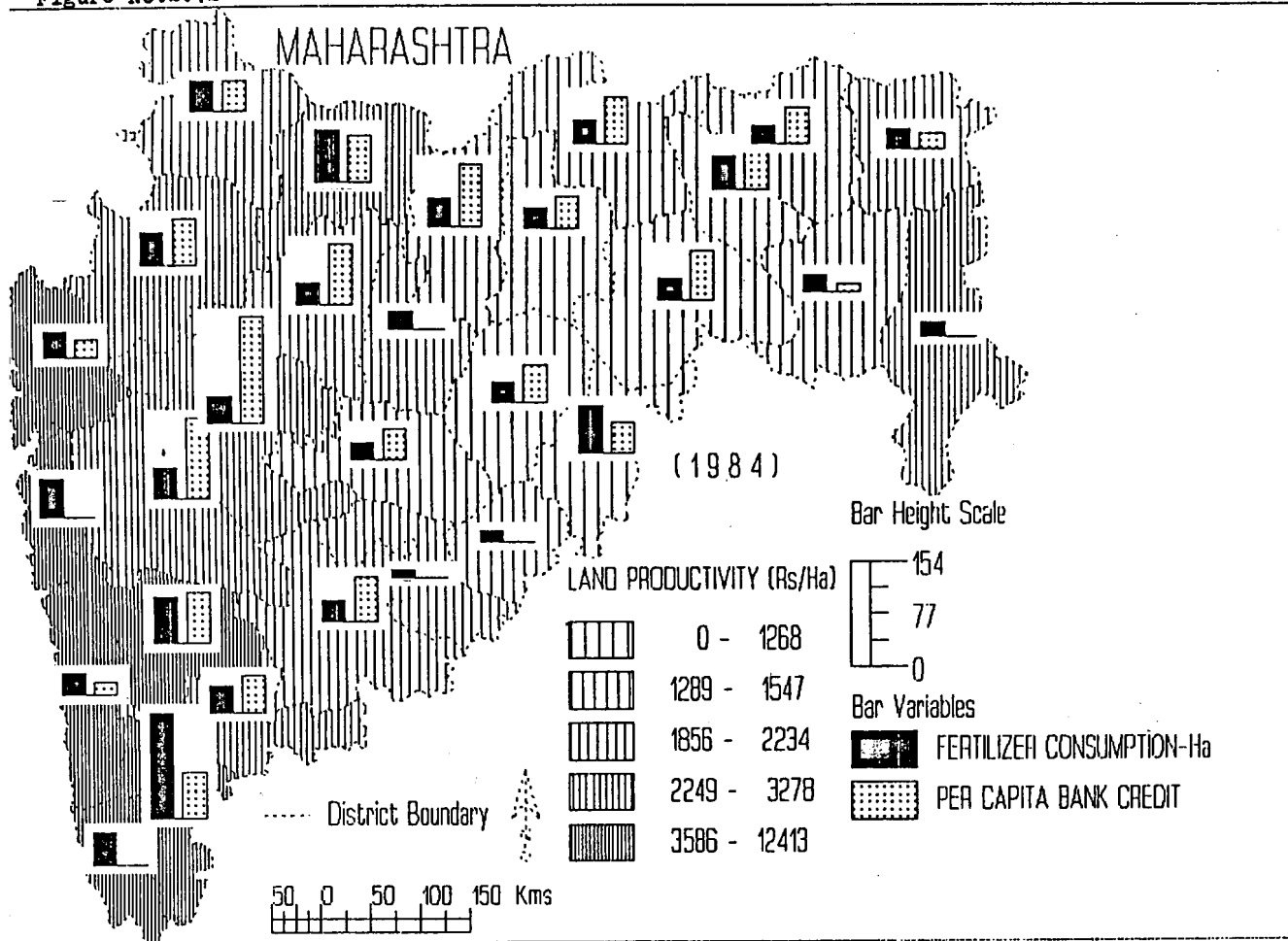


Figure No.2.12



the performance of Wasik, Bhandara, Wardha, Buldhana, Sholapur, Parbhani, Beed, Osmanabad, Latur and Nanded can cause concern. The growth as well as the declining trends can be ascribed to the behaviour of productivity (yield per hectare) because, during this decade there were no substantial area shifts.

Figure 2.4 shows the regional pattern in the input structure matched with levels of productivity. It can be easily noted the input structure dictates the pattern and the level of productivity.

The growth of crop economy during the last decade throws open many questions. Firstly, the development of agricultural sector has still to pick up in many districts of the state. Secondly, such regional patterns emerge mainly out of the resource potential, accessibility to resources for the deprived class of the cultivators and the composition of the package of technology. Thirdly, the agrarian structure developed under the forced commercialization emerged out of the sugarcane cultivation and ensuing demonstration effect. The roots of this commercialization could be traced back to the pre-independence period. Fourthly, the peasant movements were focussing on the price front without much attention to the wage-price linkages of the majority of the small and marginal farmers in the state. Lastly, the recent policies towards reduction of subsidies and credit squeeze may prove detrimental to the agricultural sector of the state, which is yet to pick up to level with other states.

2.4 Agricultural Development and Subsidies :
A District Level Analysis

In the inter-state comparison, Maharashtra comes at about middle level in the order of aggregate subsidies. The state receives Rs. 354.43 per hectare (1986-87) as subsidies total for irrigation, power and fertilizers. Among these, the state receives only Rs. 37.96 per hectare of gross sown area as fertilizer subsidy and it is ^{the} highest for irrigation (Parikh and Suryanarayana, 1989). In the state finances, deterioration of revenue accounts began from 1983-84 onwards. Investment came upto a peak point in that year and fell thereafter. The major expenditure was on the growth of rural development programmes as well as irrigation subsidies. Maharashtra alone accounts for about 20 per cent of the total irrigation projects in pipeline in the country. By the end of ^{the} seventh plan 20 major, 165 minor and 1550 state sector minor irrigation projects could be completed and 37 major and 72 medium projects will be under construction. Out of these, 17 major and 18 medium projects are in the advanced stage of construction while 20 major and 54 medium projects are in preparatory stage.

Among the major four components of implicit subsidies i.e., irrigation, fertilizers, electricity and credit, Parikh and Suryanarayana estimated the state level subsidies for all the states including Maharashtra. In 1987-88 about 12 per cent of the gross cropped area was irrigated and therefore

the irrigation subsidy also accrued only to this 12 per cent area. If worked out on the basis of irrigated area, possibly the per hectare subsidy on irrigation would be much larger than that computed by Parikh and Suryanarayana. Similarly the energy consumption purely for agricultural purpose is difficult to estimate. The total number of pumpsets energised in the state are 16,14,773 as on 31.3.91 (GOM, VIII Plan, 1992, p. 298.) This comes to about 80 pumpsets per thousand hectares, a very low density compared to some other states. Therefore, the subsidy on electricity going to agricultural sector might have been over-estimated by Parikh and Suryanarayana. According to them it would be 1.20 lakhs per thousand hectares or about Rs. 1500 per pumpset per year. The use of fertilizers in Maharashtra is only about 8 per cent of the aggregate consumption at the country level. Moreover, the fertilizer use in the state is only 44 kgs. per hectare which is far below the national average. The fertilizer use across districts does not however vary much.

As regards the finances at state level, it is observed that 1983-84 marked a watershed in the deficits. The expenditure on agriculture and other allied activities from the plan and non-plan sector does not form a sizeable portion.

Table 2.10 : Maharashtra Overall Finances

(Rs. in crores at current prices)

Sr. I t e m No.	1975-76	1980-81	1987-88
1. Own Receipts	839.9	1567.7	4403.6
2. Non-Plan Expenditure	817.2	1713.8	4414.5
Of which :			
i) Crop Husbandry	18.7	31.2	42.7
ii) Dairy Development	78.5	145.2	351.0
iii) Forestry	13.5	26.6	62.9
iv) Major and Medium Irrigation	28.9	77.9	331.4
3. Plan Revenue Expenditure	102.6	203.2	1089.9
Of which :			
i) Crop Husbandry	8.4	16.9	51.1
ii) Forestry	0.5	1.2	14.0
iii) Rural Development	16.1	39.3	454.5
iv) Irrigation	0.1	0.1	69.1

Source : Ravishankar (1990):

It can be noted that the non-plan expenditure has been growing at a very fast rate even though agriculture and allied activities do not constitute the major portion. The growth in these components is also almost similar. What is conspicuous about Maharashtra is the growth of expenditure on irrigation and rural development programmes. Therefore the major amount of subsidies also happens to be in this group. Following table gives an idea about the expenditure on irrigation, electricity and rural development.

Table 2.11 : Growth of Investment in Irrigation, Electricity and Rural Development

Sr. I t e m	1974-75	1980-81	1987-88	Growth rate (trend rate 1974-75 to 1987-88)
1. Growth of Real Investment in Irrigation (Rs. in crores at 1980-81 prices)	61.14	132.96	145.86	1.5
2. Budgeted and Actual Spending on Irrigation (Actual as % of Budgeted)	123%	109%	91%	-
3. Real Irrigation Subsidy (Rs.in crores at 1980-81 prices)	32.92	77.76	210.65	6.1
4. Loans to Electricity Board (Rs.in crores at 1980-81 prices)	66.80	191.50	101.77	-
5. Rural Development Grants (Rs.in crores at 1980-81 prices)	42.06	40.50	258.34	9.0
6. Budgeted and Actual Spending on Rural Development (Actual as % of Budgeted)	30% (1975-76)	140%	135%	-

Source : Ravishankar (1990).

One very clear picture emerges out of the table that the investment in irrigation and rural development increased at a very fast rate over the decade and half. Irrigation subsidies which form the major source of budgetary deficit

has also increased by more than six times. Hence irrigation subsidy happens to be the major implicit subsidy in Maharashtra.

Another important component of the subsidies in the state is direct subsidies under different schemes. There are various schemes in operation in the state under which subsidised inputs (minikits of seeds, fertilizers, pesticides, agricultural engineering equipments like drip or sprinkler irrigation sets, spray pumps, improved implements) are provided to the beneficiaries. Table 2.12 shows the expenditure on the schemes which provide direct subsidies in various forms. Among these are the schemes which are financed by Central Government and partly by the State Government. Some of the schemes provide assistance upto Rs. 20 thousand to the beneficiaries (GOM, 8th Plan, 1992). Largest expenditure is incurred on NODP and NPDP which are the Centrally sponsored schemes. Sprinkler and drip irrigation schemes take the second rank. Tribal sub-plan is basically an area approach which accounts for the 3rd position. Out of ^{the} remaining schemes, Special Food-grain Programme for jowar is a relatively new scheme. Plant Protection Scheme and Improved Implements Scheme are operated along with NODP and NPDP due to similarity of components.

We may turn to the spread of subsidies across the districts of the state. We have presented this distribution in Table 2.13. These are juxtaposed against the variables indicating some features of agricultural development across

TABLE 2.12 : EXPENDITURE OVER DIFFERENT SCHEMES IN MAHARASHTRA 1988-89,
1989-90 AND 1990-91

Sr. Scheme No.	(Rs. in lakhs)			
	Years			
	1988-89	1989-90	1990-91	Total
1. National Oilseed Development and National Pulses Development Programme	515.44	586.69	470.45	1572.58
2. Sprinkler and Drip Irrigation	237.78	442.75	548.41	1228.94
3. Plant Protection Scheme	56.48	26.68	27.79	110.95
4. IPRD Scheme	17.33	195.91	214.50	427.74
5. Intensive Cotton Development Scheme	58.92	3.33	47.47	109.72
6. Improved Farm Implements	18.56	22.77	21.45	62.78
7. Special Foodgrain Programme	---	---	140.16	140.16
8. Special Component Plan	342.00	163.95	336.23	842.18
9. Tribal Subplan	336.00	366.50	341.62	1044.12
Total	1582.51	1808.58	2148.08	5539.17

64

Source : Various Documents of Government of Maharashtra,
Directorate of Agriculture, Pune.

TABLE 2.13 : DISTRICTWISE DISTRIBUTION OF DIRECT SUBSIDIES ALONG WITH MAIN DEVELOPMENT INDICATORS.

SR. District NO.	Subsidy (in Rs.per hectare)	No. of operational holdings (Nos. in lakhs)	Percentage size of holdings (In hectare)	Average size of holdings (In hectare)	Growth rate in yield of total food-grains (Percent per annum)
1. Thane	75.69	2.09236	24	2.03	-7.370
2. Dhule	67.78	2.95342	24	2.54	1.795
3. Nasik	54.85	3.49550	16	3.02	-0.186
4. Chandrapur & Gadchiroli	53.68	2.83042	42	5.20	0.877
5. Bhandara -	43.39	2.81007	40	1.50	0.316
6. Raigad	42.44	2.08756	31	1.70	1.047
7. Amravati	38.02	2.81254	25	2.72	-0.297
8. Kolhapur	34.92	3.83834	40	1.33	1.572
9. Ratnagiri & Sindhudurg	34.61	4.92792	38	4.50	2.222
10. Latur	28.86	1.87509	13	3.57	-3.449*
11. Nagpur	28.49	1.94561	18	3.18	2.179
12. Yavatmal	27.48	2.59848	14	3.65	2.181
13. Ahmadnagar	25.40	4.69343	24	2.77	-0.06
14. Jalgaon	24.74	3.33977	25	2.54	2.674
15. Sangli	24.30	3.49594	26	2.04	1.628
16. Aurangabad & Jalna	23.70	5.09470	37	5.91	-0.132
17. Satara	22.05	5.04600	36	1.61	2.754
18. Wardha	21.94	1.31136	15	3.43	1.513
19. Buldhana	21.58	2.36339	18	3.02	0.388
20. Pune	20.23	4.26829	18	2.70	0.903
21. Akola	19.65	2.55928	17	3.22	4.068
22. Nanded	18.63	3.12324	21	2.64	-3.154
23. Solapur	16.17	3.40063	11	3.79	1.189
24. Parbhani	16.09	3.04934	17	3.01	-0.987
25. Beed	15.79	3.20182	18	2.91	-1.618
26. Osmanabad	10.78	1.79561	12	3.89	-3.449*

Notes : (1) * This is the combined growth rate of the districts Latur and Osmanabad.

(2) Growth rates in foodgrain yield pertaining to the period 1978-79 to 1989-90.

districts in order to understand the relationship between subsidies and agricultural development. It is clear that the distribution of subsidies is quite skewed across districts. Osmanabad has the lowest per hectare allocation of Rs. 10.78 as against Rs. 75.69 of Thane. Among the lowest subsidised districts are Osmanabad, Beed, Parbhani, Solapur, Nanded and Akola. Except Aurangabad and Latur all the districts of Marathwada region have received lower share of the subsidies. On the other hand we have districts like Dhule, Nashik, Chandrapur, Bhandara, Raigad, Amravati and Kolhapur as those with higher per hectare expenditure of subsidies. In the absence of data on the number of beneficiaries by schemes for the districts at one place we had to take per hectare allocation of these subsidies.

We have tried to bring out the relationship between growth in agricultural output and the level of subsidies across the districts of the state. Districts are grouped into twelve groups over three levels of subsidies (Low - upto Rs. 20), Medium - Rs.20 to Rs.30, and High - above Rs.30) and four levels of growth in foodgrain productivity ((i) with growth rates below zero, (ii) Growth rates positive but upto 1 per cent, (iii) Growth rates between 1 and 2 per cent, (iv) Growth rates above 2 per cent). It is interesting to note the extreme cases like Akola which receives lower level of subsidies but recorded growth rate above 2 per cent per annum. On the other side we have Thane, Amravati and Nashik

which receive higher subsidies per hectare but have recorded decline in foodgrain productivity. Similar is the case of Aurangabad, Latur and Ahmednagar.

Size of holding was taken as another control in order to understand if the subsidies have gone more to the regions characterized by dominance of small farmers. It was noted that larger subsidies did accrue to the regions with concentration of small farmers but the reason was not that the small non-viable farm units were helped by subsidising the inputs. In fact, the regions with concentration of small farmers were also the better endowed regions of the state and the flow of subsidies to the better endowed region is quite clear. This is surprising especially when we are dealing with the directly targetted subsidies. The implicit subsidies have always been determined by the control and access to resources but when the direct subsidies also follow the same pattern it becomes a matter of concern.

2.5 Conclusions

In this chapter we have looked into the macro level picture of subsidies across states within the country and across districts within the state. It is quite clear that the subsidies involve large sums of money and these should be directed ^{towards} /correcting the imbalances. Our experience across states indicated that the advantage of the subsidy policy had gone mainly to the better endowed regions. A cut or change in subsidy policy now would mean a gross injustice to those

TABLE 2.14 : CROSS CLASSIFICATION OF DISTRICTS ACCORDING TO LEVELS OF SUBSIDY,
GROWTH RATES IN FOODGRAIN YIELD AND SIZE OF HOLDING.

Subsidy per hectare of Gross Crop- ped Area	Growth Rates in Foodgrain Productivity 1978-79 to 1989-90								
	Negative		Less than 1 percent		1 to 2 percent		Above 2 percent		
	I	II	I	II	I	II	I	II	
Low (Up to Rs. 20)		Osmanabad Beed Parbhani Nanded			Solapur				Akola
Medium (Rs. 20 to Rs.30)		Aurangabad Jalna Ahmednagar Latur		Pune Buldhana	Sangli	Wardha	Satara	Yavatmal Jalgaon Nagpur	
High (Above Rs. 30)	Thane	Amaravati Nasik	Bhandara	Chandrapur Gadchiroli	Kolhapur Raigad	Dhule		Ratnagiri Sindhudurg	

Notes : (1) The classification on horizontal axis refers to size of holding.

I - indicates size of holding less than 2.5 hectares.

II - indicates size of holding above 2.5 hectares.

regions which are realising the benefits of the scheme in the recent past. Similar is the situation across districts in the state. We have noted that the regions traditionally lacking in the growth performance have not benefited either through the implicit or explicit subsidy policy. Therefore it is essential to target the subsidies properly and also support them with an agenda on the price policy. It is always argued that irrigation subsidies should not be cut because irrigation has a very high output elasticity, but the fact/^{is}that in the State of Maharashtra, irrigation forms very small portion of the total cropped area and fertilizer is an essential accompaniment of irrigation. The implicit subsidies involved in pricing of irrigation, fertilizer, credit and electricity get spread on pro-rata basis at micro level. Moreover, it is difficult to segregate their impact separately and hence for understanding the micro level realities, it is necessary to map out the impact parameters of direct subsidies.

APPENDIX 2.1

TRENDS IN THE IMPLICIT SUBSIDIES IN MAHARASHTRA

(Rs. in Millions)

Years	Fertilisers	Irrigation	Electricity	Credit	Total input Subsidy	As % of SDP
1980-81	493.29	171.93	267.13	933.10	3412.82	9.23
1981-82	571.50	190.52	374.17	1173.59	4024.46	9.89
1982-83	46.54	217.05	662.58	1330.06	4209.68	10.17
1983-84	290.70	250.80	848.40	1521.31	5168.41	10.08
1984-85	917.12	294.46	1443.53	1864.93	7170.18	13.67
1985-86	1201.59	339.60	2007.96	2103.42	8708.97	16.15
1986-87	214.97	390.35	2412.39	2372.41	8903.27	17.38
Average (1980-81 to 1986-87)	533.67	264.96	1145.17	1614.12	5942.26	12.37
Std. Dev.	407.04	80.47	829.22	520.33	2295.17	---

APPENDIX. 2.2 : EXPENDITURE ON VARIOUS SUBSIDIES SCHEMES (RS. IN LAKHS.)

DISTRICTS	1>N.O.D.P.+ N.P.D.P.			TOTAL	2> SPRINKLER/DRIP SCHEME			TOTAL
	1988-89	1989-90	1990-91		1988-89	1989-90	1990-91	
THANE	0.00	0.00	0.00	0.00	6.80	4.69	5.01	16.50
RAIGAD	0.00	0.00	0.00	0.00	0.44	0.50	0.69	1.63
RANTHAMBURI	0.00	0.00	0.00	0.00	0.63	0.82	1.00	2.45
SINHDURG	0.00	0.00	0.00	0.00	3.25	1.80	1.95	7.00
TOTAL KONKAN DN.	0.00	0.00	0.00	0.00	11.12	7.81	8.65	27.58
NASHIK	21.97	22.70	14.88	59.55	40.87	85.84	149.07	275.78
DHULE	22.95	29.15	23.13	75.23	1.60	1.96	2.34	5.90
JALGAON	27.58	26.61	25.67	79.86	10.88	20.16	38.54	69.58
TOTAL NASHIK DN.	72.50	78.46	63.68	214.64	53.35	107.96	189.95	351.26
AHAMEDNAGAR	22.84	28.87	15.91	67.62	28.27	48.96	64.24	141.47
PUNE	19.91	25.88	20.63	66.42	14.71	24.00	24.48	63.19
SOLAPUR	23.60	47.69	20.24	91.53	10.10	10.00	24.68	44.78
TOTAL PUNE DN.	66.35	102.44	56.78	225.57	53.08	82.96	113.40	249.44
SATARA	23.25	44.98	19.54	87.77	5.00	16.00	9.00	30.00
SANGLI	16.40	21.04	21.79	59.23	6.62	30.00	25.40	62.02
KOLHAPUR	15.07	12.40	16.58	44.05	14.43	18.00	18.20	50.63
TOTAL KOLHAPUR DN.	54.72	78.42	57.91	191.05	26.05	64.00	52.60	142.65
AURANGABAD	25.27	30.05	24.57	79.89	9.99	25.00	48.20	83.19
JALNA	18.69	12.59	15.73	47.01	3.98	15.00	15.00	33.98
BEED	25.11	24.93	29.15	79.19	2.06	10.20	6.80	19.06
TOTAL A'BAD DN.	69.07	67.57	69.45	206.09	16.03	50.20	70.00	136.23
LATUR	38.90	28.59	26.85	94.34	12.94	28.00	8.37	49.31
OSMANABAD	29.84	37.83	28.62	96.29	6.48	5.59	7.31	19.38
NAWDE	13.13	24.12	15.05	52.30	6.50	8.00	13.33	27.83
PARBHANI	29.02	37.47	26.48	92.97	11.61	9.06	10.70	31.37
TOTAL LATUR DN.	110.89	128.01	97.00	335.90	37.53	50.65	39.71	127.89
BULDHANA	25.35	19.76	19.85	64.96	9.01	11.00	10.49	30.50
AKOLA	28.12	21.00	15.37	64.49	4.36	13.99	13.30	31.65
AMRAVATI	24.74	20.86	19.59	65.19	14.06	29.00	28.89	71.95
YAVATMAL	19.97	20.01	12.43	52.41	10.01	15.00	11.35	36.36
TOTAL AMRAVATI DN.	98.18	81.63	67.24	247.05	37.44	68.99	64.03	170.46
WARDHA	16.27	13.47	7.85	37.59	1.28	3.13	2.07	6.48
NAGPUR	14.96	20.05	24.03	59.04	0.71	1.86	4.04	6.61
BHANDARA	3.69	4.93	4.67	13.29	0.49	2.08	2.96	5.53
CHANDRAPUR	7.39	10.36	20.28	38.03	0.50	3.08	0.50	4.08
GADCHIROLI	1.42	1.35	1.56	4.33	0.20	0.03	0.50	0.73
TOTAL NAGPUR DN	43.73	50.16	58.39	152.28	3.18	10.18	10.07	23.43
MAHARASHTRA	515.44	586.69	470.45	1572.58	237.78	442.75	548.41	1228.94

SOURCE : Collected from various Document available at irectorate of Agriculture ,
Government of Maharashtra , Pune

DISTRICTS	3>PLANT PROTECTION SCHEME			TOTAL	4> I.P.R.D.			TOTAL
	1988-89	1989-90	1990-91		1988-89	1989-90	1990-91	
THANE	0.00	0.07	0.00	0.07	NA	24.46	33.00	57.46
RAIGAD	0.05	0.09	0.00	0.13	NA	21.46	22.62	44.08
RANTANGIRI	0.02	0.08	0.00	0.10	NA	10.07	23.02	33.09
SINDHUDURG	0.34	0.00	0.00	0.34	NA	18.27	9.78	28.05
TOTAL KONKAN DN.	0.41	0.24	0.00	0.64	NA	74.26	88.42	162.68
NASHIK	1.68	0.16	0.32	2.16	NA	19.77	16.76	36.53
DHULE	3.42	1.14	1.35	5.91	NA	0.00	0.00	0.00
JALGAON	1.12	1.64	0.89	3.65	NA	0.00	0.00	0.00
TOTAL NASHIK DN.	6.22	2.94	2.56	11.72	NA	19.77	16.76	36.53
AHAMEDNAGAR	1.12	0.59	1.05	2.76	NA	0.00	0.00	0.00
PUNE	0.81	0.50	0.51	1.82	NA	0.00	0.00	0.00
SOLAPUR	0.35	0.39	0.69	1.43	NA	0.00	0.00	0.00
TOTAL PUNE DN.	2.28	1.48	2.25	6.01	NA	0.00	0.00	0.00
SATARA	1.16	0.74	1.17	3.07	NA	0.00	0.00	0.00
SANGLI	1.06	1.03	1.63	3.72	NA	0.00	0.00	0.00
KOLHAPUR	3.96	2.93	1.18	8.07	NA	0.00	14.90	14.90
TOTAL KOLHAPUR DN.	6.18	4.70	3.98	14.86	NA	0.00	14.90	14.90
AURANGABAD -	2.06	1.34	2.17	5.57	NA	0.00	0.00	0.00
JALNA	0.38	0.77	0.41	1.56	NA	0.00	0.00	0.00
BEED	0.61	0.78	0.86	2.25	NA	0.00	0.00	0.00
TOTAL A'BAD DN.	3.05	2.89	3.44	9.38	NA	0.00	0.00	0.00
LATUR	0.11	0.47	1.04	1.62	NA	0.00	0.00	0.00
OSHANABAD	1.51	2.16	0.00	3.67	NA	0.00	0.00	0.00
NANDED	2.00	0.72	0.00	2.72	NA	0.00	0.00	0.00
PARBHANI	2.28	1.43	2.75	6.46	NA	0.00	0.00	0.00
TOTAL LATUR DN.	5.90	4.78	3.79	14.47	NA	0.00	0.00	0.00
BULDHANA	4.30	1.01	1.90	7.21	NA	0.00	0.00	0.00
AKOLA	3.78	1.90	2.23	7.91	NA	0.00	0.00	0.00
AMRAYATI	2.99	1.22	2.29	6.50	NA	0.00	0.00	0.00
YAVATMAL	7.13	1.23	0.70	9.06	NA	0.00	0.00	0.00
TOTAL AMRAYATI DN.	18.20	5.36	7.12	30.68	NA	0.00	0.00	0.00
WARDHA	0.50	0.46	0.47	1.43	NA	0.00	0.00	0.00
NAGPUR	1.05	3.81	3.86	8.73	NA	0.00	0.00	0.00
BHANDARA	3.57	0.02	0.00	3.59	10.94	47.08	46.30	104.32
CHANDRAPUR	7.70	0.00	0.32	8.02	4.98	30.84	32.00	67.82
GADCHIROLI	1.41	0.00	0.00	1.41	1.41	23.96	16.12	41.49
TOTAL NAGPUR DN	14.24	4.29	4.65	23.18	17.33	101.88	94.42	213.63
MAHARASHTRA	56.48	26.68	27.79	110.95	17.33	195.91	214.50	427.74

70(C)

DISTRICTS	5> Intensive COTTON Divp			TOTAL	6>IMPROVED FARM IMPLIMENTS			TOTAL
	1988-89	1989-90	1990-91		1988-89	1989-90	1990-91	
THANE	0.00	0.00	0.00	0.00	0.00	0.02	0.12	0.14
RAIGAD	0.00	0.00	0.00	0.00	0.63	0.07	0.00	0.70
RANTANGIRI	0.00	0.00	0.00	0.00	0.20	0.00	0.12	0.32
SINDHUDURG	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.23
TOTAL KONKAN DN.	0.00	0.00	0.00	0.00	1.06	0.09	0.24	1.39
NASHIK	0.00	0.00	0.00	0.00	0.48	1.13	2.76	4.37
DHULE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JALGAON	9.68	0.18	4.20	14.06	1.18	2.37	2.08	5.63
TOTAL NASHIK DN.	9.68	0.18	4.20	14.06	1.66	3.50	4.84	10.00
AHAMEDNAGAR	0.00	0.00	0.00	0.00	2.55	2.49	4.50	9.54
PUNE	0.00	0.00	0.00	0.00	3.63	0.00	0.25	3.88
SOLAPUR	0.00	0.00	0.00	0.00	0.96	0.92	0.74	2.62
TOTAL PUNE DN.	0.00	0.00	0.00	0.00	7.14	3.41	5.49	16.04
SATARA	0.00	0.00	0.00	0.00	0.91	1.85	1.60	4.36
SANGLI	0.00	0.00	0.00	0.00	1.32	2.43	1.66	5.41
KOLHAPUR	0.00	0.00	0.00	0.00	0.88	1.77	0.95	3.60
TOTAL KOLHAPUR DN.	0.00	0.00	0.00	0.00	3.11	6.05	4.21	13.37
AURANGABAD	0.00	0.00	0.00	0.00	0.00	1.31	0.50	1.81
JALNA	2.93	0.15	3.06	6.14	0.00	0.00	0.00	0.00
BEED	0.00	0.00	0.00	0.00	1.59	1.54	1.58	4.71
TOTAL A'BAD DN.	2.93	0.15	3.06	6.14	1.59	2.85	2.08	6.52
LATUR	0.00	0.00	0.00	0.00	0.89	1.50	0.50	2.89
OSMANABAD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NANDED	5.59	0.34	5.30	11.23	0.15	0.63	0.25	1.03
PARBHANI	4.32	0.37	4.26	8.95	1.02	1.51	1.30	3.83
TOTAL LATUR DN.	9.91	0.71	9.56	20.18	2.06	3.64	2.05	7.75
BULDHANA	6.92	0.42	6.93	14.27	0.40	0.94	1.25	2.59
AKOLA	15.26	0.46	1.53	17.25	0.27	0.58	0.52	1.37
AMRVATI	5.71	0.31	9.28	15.30	0.00	0.00	0.00	0.00
YAVATMAL	6.66	0.70	7.45	14.81	0.00	0.00	0.00	0.00
TOTAL AMRVATI DN.	34.55	1.89	25.19	61.63	0.67	1.52	1.77	3.96
WARDHA	1.28	0.30	3.93	5.51	0.36	0.50	0.32	1.18
NAGPUR	0.57	0.10	1.53	2.20	0.31	0.75	0.35	1.41
BHANDARA	0.00	0.00	0.00	0.00	0.40	0.36	0.00	0.76
CHANDRAPUR	0.00	0.00	0.00	0.00	0.20	0.10	0.10	0.40
GADCHIROLI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL NAGPUR DN	1.85	0.40	5.46	7.71	1.27	1.71	0.77	3.75
MAHARASHTRA	58.92	3.33	47.47	109.72	18.56	22.77	21.45	62.78

DISTRICTS	7>SPECIAL FG PROG (JWR)			TOTAL	8>SPECIAL COMPONENT PROGRAMME			TOTAL
	1988-89	1989-90	1990-91		1988-89	1989-90	1990-91	
THANE	NA	NA	0.00	0.00	6.75	6.47	7.45	20.67
RAIGAD	NA	NA	0.00	0.00	7.00	4.54	7.00	18.54
RANTANGIRI	NA	NA	0.00	0.00	14.96	4.06	15.00	34.02
SINDHUDURG	NA	NA	0.00	0.00	8.81	4.20	6.00	19.01
TOTAL KONKAN DN.	NA	NA	0.00	0.00	37.52	19.27	35.45	92.24
NASHIK	NA	NA	10.31	10.31	14.28	8.52	17.45	40.25
DHULE	NA	NA	0.00	0.00	10.95	5.65	10.00	26.60
JALGAON	NA	NA	9.94	9.94	11.32	6.93	17.45	35.70
TOTAL NASHIK DN.	NA	NA	20.25	20.25	36.55	21.10	44.90	102.55
AHAMEDNAGAR	NA	NA	14.34	14.34	16.00	6.10	17.60	39.70
PUNE	NA	NA	8.91	8.91	16.02	5.78	10.25	32.05
SOLAPUR	NA	NA	15.15	15.15	18.85	5.98	14.75	39.58
TOTAL PUNE DN.	NA	NA	38.40	38.40	50.87	17.86	42.60	111.33
SATARA	NA	NA	3.93	3.93	9.90	5.44	14.26	29.60
SANGLI	NA	NA	0.00	0.00	10.06	4.89	7.75	22.70
KOLHAPUR	NA	NA	9.26	9.26	9.65	6.50	10.50	26.65
TOTAL KOLHAPUR DN.	NA	NA	13.19	13.19	29.61	16.83	32.51	78.95
AURANGABAD	NA	NA	14.30	14.30	10.50	5.05	5.50	21.05
JALNA	NA	NA	0.00	0.00	4.90	6.45	12.10	23.45
BEED	NA	NA	10.51	10.51	11.00	5.00	8.00	24.00
TOTAL A'BAD DN.	NA	NA	24.81	24.81	26.40	16.50	25.60	68.50
LATUR	NA	NA	20.58	20.58	9.99	3.00	7.24	20.23
OSMANABAD	NA	NA	3.80	3.80	8.00	4.12	6.21	18.33
NANDED	NA	NA	6.84	6.84	12.00	5.01	8.60	25.61
PARBHANI	NA	NA	0.00	0.00	7.99	4.24	7.40	19.63
TOTAL LATUR DN.	NA	NA	31.22	31.22	37.98	16.37	29.45	83.80
BULDHANA	NA	NA	0.00	0.00	15.79	6.53	17.45	39.77
AKOLA	NA	NA	0.00	0.00	15.54	7.05	17.49	40.08
AMRVATI	NA	NA	8.49	8.49	15.00	7.06	17.45	39.51
YAVATMAL	NA	NA	3.80	3.80	16.00	9.63	18.80	44.43
TOTAL AMRVATI DN.	NA	NA	12.29	12.29	62.33	30.27	71.19	163.79
WARDHA	NA	NA	0.00	0.00	10.24	3.75	14.39	28.38
NAGPUR	NA	NA	0.00	0.00	17.99	6.97	14.39	39.35
BHANDARA	NA	NA	0.00	0.00	12.84	5.46	10.00	28.30
CHANDRAPUR	NA	NA	0.00	0.00	11.50	5.55	10.00	27.05
GADCHIROLI	NA	NA	0.00	0.00	8.17	4.02	5.75	17.94
TOTAL NAGPUR DN	NA	NA	0.00	0.00	60.74	25.75	54.53	141.02
MAHARASHTRA	NA	NA	140.16	140.16	342.00	163.95	336.23	842.18

DISTRICTS	9>TRIBAL SUBPLAN			TOTAL	10> GRAND TOTAL			TOTAL
	1988-89	1989-90	1990-91		1988-89	1989-90	1990-91	
THANE	38.97	45.56	32.56	117.09	52.52	81.27	78.14	211.93
RAIGAD	6.70	8.10	9.25	24.05	14.82	34.76	39.56	89.13
RAMTANGIRI	0.00	0.00	0.00	0.00	15.81	15.03	39.14	69.98
SINDHUDURG	0.00	0.00	0.00	0.00	12.63	24.27	17.73	54.63
TOTAL KONKAN DN.	45.67	53.66	41.81	141.14	95.78	155.32	174.57	425.67
					0.00	0.00	0.00	
NASHIK	24.84	30.09	42.65	97.58	104.12	168.21	254.20	526.53
DHULE	40.57	75.32	29.15	145.04	79.49	113.22	65.97	258.68
JALGAON	7.00	9.62	4.90	21.52	68.76	67.51	103.67	239.94
TOTAL NASHIK DN.	72.41	115.03	76.70	264.14	252.37	348.94	423.84	1025.15
					0.00	0.00	0.00	
AHAMEDNAGAR	15.55	22.34	14.35	52.24	86.33	109.35	131.99	327.67
PUNE	20.02	15.88	18.50	54.40	75.10	72.04	83.53	230.67
SOLAPUR	0.03	0.19	0.35	0.57	53.89	65.17	76.60	195.66
TOTAL PUNE DN.	35.60	38.41	33.20	107.21	215.32	246.56	292.12	754.00
					0.00	0.00	0.00	
SATARA	0.00	0.00	0.00	0.00	40.22	69.01	49.50	158.73
SANGLI	0.00	0.00	0.00	0.00	35.46	59.39	58.23	153.08
KOLHAPUR	0.00	0.00	0.00	0.00	43.99	41.60	71.57	157.16
TOTAL KOLHAPUR DN.	0.00	0.00	0.00	0.00	119.67	170.00	179.30	468.97
					0.00	0.00	0.00	
AURANGABAD -	0.06	0.69	0.45	1.20	47.88	63.44	95.69	207.01
JALNA	0.02	0.20	0.41	0.63	30.90	35.16	46.71	112.77
BEED	0.02	0.19	0.62	0.83	40.39	42.64	57.52	140.55
TOTAL A'BAD DN.	0.10	1.08	1.48	2.66	119.17	141.24	199.92	460.33
					0.00	0.00	0.00	
LATUR	0.00	0.10	0.45	0.55	62.83	61.66	65.03	189.52
OSMANABAD	0.03	0.30	0.45	0.78	45.86	50.00	46.39	142.25
NANDED	9.55	7.05	6.75	23.35	48.92	45.87	56.12	150.91
PARBHANI	2.67	3.51	4.34	10.52	58.91	57.59	57.23	173.73
TOTAL LATUR DN.	12.26	10.96	11.99	35.21	216.53	215.12	224.77	656.42
					0.00	0.00	0.00	
BULDHANA	1.39	1.50	1.80	4.69	63.16	41.16	59.67	163.99
AKOLA	1.64	1.80	2.80	6.24	68.97	46.78	53.24	168.99
AMRAVATI	36.17	34.30	11.56	82.03	98.67	92.75	97.55	288.97
YAVATMAL	23.55	25.05	32.32	80.92	83.32	71.62	86.85	241.79
TOTAL AMRAVATI DN.	62.75	62.65	48.48	173.88	314.12	252.31	297.31	863.74
					0.00	0.00	0.00	
WARDHA	1.93	2.11	14.10	18.14	31.86	23.72	43.13	98.71
NAGPUR	12.43	14.47	26.70	53.60	48.03	48.01	74.90	170.94
BHANDARA	26.45	27.23	3.15	56.83	58.38	87.16	67.08	212.62
CHANDRAPUR	30.47	23.71	41.45	95.63	62.74	73.64	104.65	241.03
GADCHIROLI	35.94	17.19	42.56	95.69	48.55	46.55	66.49	161.59
TOTAL NAGPUR DN	107.22	84.71	127.96	319.89	249.56	279.08	356.25	884.89
MAHARASHTRA	336.00	366.50	341.62	1044.12	1582.51	1808.58	2148.08	5539.17

CHAPTER III

FARM LEVEL IMPACT OF SUBSIDIES

3.1 Introduction

Micro level analysis of the impact of subsidies would require a comparison of a farm over time (before and after subsidies) or across farms (with and without subsidies). Among the explicit and implicit subsidies, it becomes difficult to analyse the impact of implicit subsidies due to the difficulty of the perception of benefits excluding subsidies or in the increased price scenario. It is difficult to decompose the aggregate impact into the components of impact with subsidies and without them. In the case of direct subsidies this difficulty does not feature and a 'with' and 'without' comparison gives a clear picture of the impact.

Keeping in view the common format of the study evolved in the meeting of AER centres we have decided to restrict to the analysis of impact of direct subsidies. Out of the nine major groups of subsidies given below, we chose four schemes, namely, (i) NODP and NPDP, (ii) Sprinkler and Drip Irrigation Scheme, (iii) Special Component Programme and (iv) Intensive Cotton Development Programme.

Major Schemes under direct subsidies:

- (1) NODP and NPDP
- (2) Sprinkler and Drip Irrigation
- (3) Plant Protection

- (4) IPRD Scheme
- (5) Intensive Cotton Development Scheme
- (6) Improved Implements Scheme
- (7) Special Foodgrain Programme
- (8) Special Component Programme
- (9) Tribal Sub-Plan

The choice of the schemes was guided only by the consideration of their importance in the agriculture of the State. NODP and NPDP constitute the largest scheme as far as expenditure is concerned, followed by Sprinkler and Drip irrigation scheme. Therefore we selected these two. The Special Component Programme was selected because it offers locational flexibility to the implementing officers. The last among the four was Cotton Development Programme which was chosen both because of importance of cotton as the second important cash crop of Maharashtra from a developmentally lagging region of the State, i.e., Vidarbha. Our choice of districts was solely guided by the amount of expenditure incurred in the districts.

We chose Akola district under Intensive Cotton Development Programme because it has the highest expenditure on the scheme during 1988-89 to 1990-91 (see Appendix 2.2). Ahmednagar was selected under Special Component Plan and Nashik under the Sprinkler/Drip Irrigation Schemes, with some consideration. While selecting the district under NODP and NPDP, we chose Latur, which has the second highest expenditure on the scheme, but an extremely well developed crop sector for oilseeds and pulses. Moreover the difference between the

highest expenditure and that for Latur is not very large.

The four subsidies can be classified as (i) Crop improvement subsidies under which would fall NODP and NPDP, (ii) Flexible subsidies covering the Special Component Programme and (iii) High cost subsidies involving drip and sprinkler irrigation scheme. Thus theoretically, the impact of these would also be different. Under the impact of Crop Improvement Subsidies (CIS), we would look for the changes in cropping pattern, crop intensities and income generated out of the crop apart from noting the specific problems relating to the crop under reference. The High Cost Subsidies (HCS) would offer a totally different set of impact parameters. These would involve the change in cropping pattern and intensity in order to locate the probable tilt in the area decisions. Employment, income and use of modern varieties along with the changing structure of inputs would form an integral part of the impact analysis of HCS. The Flexible Subsidies (FS) would influence all the parameters given HSC, but may even involve the discussion about the choice of a particular scheme.

3.2 The Study Area

The districts chosen under these schemes fall under different categories according to their development experience. We try here to review briefly the developmental position of these districts on the basis of some important parameters. Among the districts, Akola has recorded highest rate of growth in production as well as productivity of foodgrains with lowest proportion of area under irrigation. Nashik holds

TABLE 3.1 : A COMPARITIVE PICTURE OF THE SELECTED DISTRICTS

Parameters	Ahmed-nagar	Akola	Latur	Nashik
1. Growth rate in Foodgrain Productivity	-0.060	4.068	-3.449	-0.186
2. Growth rate in Foodgrain Production	1.270	4.190	2.590	1.380
3. Growth rate in Production of Oilseeds	4.297	---	7.287	-2.538
4. Growth rate in Production of Pulses	6.316	6.521	0.937	0.655
5. Cropping Intensity (Percent)	112.000	107.000	117.000	107.000
5. Percent of Gross Irrigated Area	18.900	2.500	5.500	17.000
6. Fertiliser use in Kgs per hectare	39.070	31.170	15.670	43.930
7. Proportion of number of holdings below two hectare	56.000	48.000	38.000	49.000
8. Expenditure on Subsidies under the Nine Schemes for (1988-89 to 1990-91)	109.220	47.420	46.850	175.510
9. Expenditure on the Selected Scheme	82.930	51.160	54.630	348.750
10. Number of Selected Beneficiaries	25.000	25.000	25.000	25.000
11. Number of Selected Non Beneficiaries	25.000	25.000	25.000	25.000

- Notes : (1) Growth rates pertain 1978-79 to 1989-90.
(2) Latur and Osmanabad data were combined.
(3) 3 years average (85-86 to 87-88) is taken to calculate cropping intensity.
(4) data for 86-87 is considered to calculate percent of Gross Irrigated Area.
(5) For small holdings, data for the year 85-86 is used.
(6) Fertiliser used is average of 1986-87 to 1988-89.

the distinction of having highest expenditure on the group of nine subsidies as well as the proportion of small holdings more than 25 per cent. Another interesting feature is the highest growth in the oilseed production in Latur and Ahmednagar districts. Latur also has the distinction of having highest cropping intensity with moderate proportion of irrigated area.

After selecting the districts, the blocks were selected on the same basis as that of the districts. The blocks having recorded highest achievements in terms of the specified scheme were selected and a list of the beneficiaries was obtained from the Block Development Office. It was found that many times, these lists were not properly maintained and sometimes we had to correct the list based on the records available at the BDO Office. Twenty-five beneficiaries were selected randomly, out of the list thus prepared. The non-beneficiaries were selected from the same villages and with almost the similar land holding parameters. We also had taken care to include the non-beneficiaries who could not get the benefits due to various reasons.

3.3 Land Use and Cropping Pattern

Changes in the land utilization pattern are not extremely elastic to the subsidies in general but if the subsidies involve improvement in irrigation then the broad parameters of land use undergo change. Especially, the changes occur in the intensity of land use and the proportion of land left fallow. In case of the regions characterized by larger size of holdings, the increased resource intensity forces the cultivators to release some

TABLE 3.2 (A) : LAND UTILISATION OF BENEFICIARIES AND NON BENEFICIARIES (AKOLA)

ITEMS (UNITS)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
1. SIZE OF HOLDING (HA.)	1.18	2.64	7.20	2.67	1.24	3.15	6.13	3.02
2. IRRIGATED AREA								
a> TOTAL (HA.)	0.05	0.48	0.00	0.13	0.14	0.11	1.47	0.45
b> % OF IRRIGATION	4.53	18.18	0.00	4.79	11.09	3.57	23.91	14.83
c> CANAL %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d> WELL %	100.00	100.00	0.00	100.00	100.00	100.00	100.00	100.00
3. UN-IRRIGATED (HA.)	1.12	2.16	7.20	2.55	1.10	3.04	4.67	2.58
4. TOTAL WASTE LAND (HA.)	0.01	0.04	0.00	0.01	0.00	0.00	0.00	0.00
5. NET CULTIVATED (HA.)	1.17	2.60	7.20	2.66	1.24	3.45	6.13	3.12
6. AREA CULTIVATED MORE THAN ONCE (HA.)	0.04	0.32	0.40	0.17	0.07	0.40	0.00	0.16
7. GROSS CROPED AREA (HA.)	1.21	2.92	7.60	2.83	1.31	3.85	6.13	3.28
8. CROPPING INTENSITY (%)	103.42	112.31	105.56	106.31	105.88	111.59	100.00	105.13

NOTE : SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES

TABLE 3.2 (B) : LAND UTILISATION OF BENEFICIARIES AND NON BENEFICIARIES (AHMEDNAGAR)

ITEMS (UNITS)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
1. SIZE OF HOLDING (HA.)	1.32	2.15	3.41	2.07	1.09	2.18	3.30	1.87
2. IRRIGATED AREA								
a> TOTAL (HA.)	0.60	0.80	1.07	0.78	0.25	0.12	0.00	0.16
b> % OF IRRIGATION	45.41	37.14	31.28	37.46	23.02	5.36	0.00	8.32
c> CANAL %	0.00	6.67	0.00	4.12	0.00	0.00	0.00	0.00
d> WELL %	100.00	93.33	100.00	95.88	100.00	100.00	0.00	100.00
3. UN-IRRIGATED (HA.)	0.61	1.32	2.34	1.24	0.84	2.06	3.30	1.72
4. TOTAL WASTE LAND (HA.)	0.11	0.04	0.27	0.09	0.04	0.09	0.80	0.16
5. NET CULTIVATED (HA.)	1.21	2.12	3.14	1.98	1.05	2.08	2.50	1.72
6. AREA CULTIVATED MORE THAN ONCE (HA.)	0.40	0.54	0.67	0.52	0.50	0.42	0.33	0.44
7. GROSS CROPPED AREA (HA.)	1.61	2.66	3.81	2.50	1.55	2.51	2.83	2.16
8. CROPPING INTENSITY (%)	133.14	125.75	121.21	126.14	147.80	120.24	113.33	125.74

NOTE : SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 3 HECTARES , III - ABOVE 3 HECTARES

TABLE 3.2 (C) : LAND UTILISATION OF BENEFICIARIES AND NON BENEFICIARIES (LATUR)

ITEMS (UNITS)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
1. SIZE OF HOLDING (HA.)	1.60	2.44	11.70	6.61	1.15	2.92	6.79	4.44
2. IRRIGATED AREA								
a> TOTAL (HA.)	0.23	0.64	2.89	1.59	0.69	0.40	2.48	1.56
b> % OF IRRIGATION	14.11	26.23	24.72	24.01	60.30	13.70	36.46	35.20
c> CANAL %	0.00	0.00	48.99	42.82	0.00	0.00	0.00	0.00
d> WELL %	100.00	100.00	51.01	57.18	100.00	100.00	100.00	100.00
3. UN-IRRIGATED (HA.)	1.37	1.80	8.06	4.67	0.46	2.52	4.32	2.88
4. TOTAL WASTE LAND (HA.)	0.00	0.28	1.27	0.66	0.06	0.04	0.54	0.31
5. NET CULTIVATED (HA.)	1.60	2.80	10.43	6.08	1.09	2.88	6.25	4.13
6. AREA CULTIVATED MORE THAN ONCE (HA.)	0.17	0.92	1.04	0.74	0.38	0.48	1.69	1.08
7. GROSS CROPED AREA (HA.)	1.77	3.72	11.48	6.82	1.47	3.36	7.94	5.21
8. CROPPING INTENSITY (%)	110.74	132.86	109.98	112.15	134.73	116.67	127.02	126.14

NOTE : SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES

TABLE 3.2 (D) : LAND UTILISATION OF BENEFICIARIES AND NON BENEFICIARIES (WASHIK)

ITEMS (UNITS)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	IIa	IIIa	ALL
1. SIZE OF HOLDING (HA.)	1.36	2.83	5.58	3.23	0.97	2.31	6.53	2.12
2. IRRIGATED AREA								
a> TOTAL (HA.)	1.36	2.83	4.22	2.74	0.68	1.66	1.50	1.13
b> % OF IRRIGATION	100.00	100.00	75.70	84.89	69.46	71.68	22.96	53.16
c> CANAL %	5.16	4.71	4.21	4.52	36.36	38.97	66.67	42.57
d> WELL %	94.84	95.29	95.79	95.48	63.64	61.03	33.33	57.43
3. UN-IRRIGATED (HA.)	0.00	0.00	1.18	0.42	0.30	0.65	5.03	0.99
4. TOTAL WASTE LAND (HA.)	0.02	0.05	0.61	0.24	0.04	0.22	3.50	0.52
5. NET CULTIVATED (HA.)	1.38	2.78	4.68	2.90	0.93	2.09	3.03	1.60
6. AREA CULTIVATED MORE THAN ONCE (HA.)	0.02	0.27	0.64	0.30	0.00	0.00	0.00	0.00
7. GROSS CROPPED AREA (HA.)	1.40	3.05	5.32	3.21	0.93	2.09	3.03	1.60
8. CROPPING INTENSITY (%)	101.45	109.58	113.78	110.47	100.00	100.00	100.00	100.00

NOTE : SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , IIa - 2 TO 3 HECTARES , III - ABOVE 4 HECTARES , IIIa - ABOVE 3 HECTARES

portions of his holding out of cultivation. This does not happen in the regions with smaller average size of holdings. The change in the crop pattern is, however, quite responsive to the subsidies both direct and indirect. The decision making process involves at least the short term changes in response to the receipt of subsidy. These are retained based on the behaviour of the usual economic parameters like income generation, risk behaviour, price responses, employment intensity, cash availability, etc. We expect two types of changes in the crop pattern. The special crop programmes are expected to increase the area under the crop for which the inputs are supplied. Therefore, in the district with NODP and NPDP, we expect an increased area under these crops. Similarly Intensive Cotton Development Programme would lead to an increased share of area under cotton. On the other hand, the HCS and FS having emphasis on irrigation would lead to larger commercialization of the cropping pattern. It may be noted here that under the Special Component Plan (FS) all the farmers preferred well irrigation and/or pipeline for irrigation.

We have presented the land use pattern of beneficiaries and non-beneficiaries over the districts in Tables 3.2(A) to 3.2(D). One can observe a mixed picture across the four districts representing four schemes. Cropping intensity is higher in the beneficiary group under the three schemes. Only in Latur, we found ^{the cropping intensity of non-}
_{that} beneficiaries exceeding / of beneficiaries. In fact the non-beneficiaries have a slightly higher irrigation and that

TABLE 3.3 (A) : CROPPING PATTERN OF BENEFICIARIES AND NON BENEFICIARIES (AKOLA)

ITEMS	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
1. CEREALS								
a> IR %	68.42	50.00	0.00	58.97	100.00	62.50	60.42	62.12
b> UIR %	20.55	12.70	31.58	25.34	5.71	15.94	16.18	13.95
c> TOTAL %	25.56	17.81	31.58	27.19	8.33	20.78	27.72	21.70
2. PULSES								
a> IR %	18.42	0.00	0.00	8.97	0.00	37.50	0.00	9.09
b> UIR %	13.05	33.33	24.21	23.22	14.63	31.88	23.53	25.07
c> TOTAL %	13.61	28.77	24.21	22.43	14.23	32.47	17.39	22.50
3. COTTON								
a> IR %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
b> UIR %	56.74	53.97	44.21	49.09	75.37	52.17	58.82	59.53
c> TOTAL %	50.80	46.58	44.21	46.39	73.28	46.75	43.48	49.95
4. CASH CROPS								
a> IR %	13.16	50.00	0.00	32.05	0.00	0.00	39.58	28.79
b> UIR %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
c> TOTAL %	1.38	6.85	0.00	1.77	0.00	0.00	10.33	4.63
5. OIL SEEDS								
a> IR %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
b> UIR %	9.66	0.00	0.00	2.35	4.28	0.00	1.47	1.45
c> TOTAL %	8.65	0.00	0.00	2.22	4.16	0.00	1.09	1.22
6. OTHER								
a> IR %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
b> UIR %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
c> TOTAL %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7. GROSS CROPPED AREA								
a> IR %	100.00	100.00	0.00	100.00	100.00	100.00	100.00	100.00
b> UIR %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
c> TOTAL %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.
 2) IR - IRRIGATED , UIR - UNIRRIGATED

TABLE 3.3 (B) : CROPPING PATTERN OF BENEFICIARIES AND NON BENEFICIARIES (AHMEDNAGAR)

ITEMS	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
1. CEREALS								
a> IR %	95.24	78.46	92.81	84.50	88.41	60.00	0.00	77.98
b> UIR %	59.57	62.74	91.59	67.65	76.69	76.98	78.82	77.23
c> TOTAL %	72.89	67.49	91.95	72.93	79.30	75.85	78.82	77.30
2. PULSES								
a> IR %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
b> UIR %	30.50	26.48	5.93	23.27	14.57	11.40	9.41	11.84
c> TOTAL %	19.11	18.47	4.20	15.98	11.32	10.65	9.41	10.64
3. CASH CROPS								
a> IR %	0.00	13.26	7.19	9.38	5.80	40.00	0.00	18.35
b> UIR %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
c> TOTAL %	0.00	4.01	2.10	2.94	1.29	2.66	0.00	1.85
4. OIL SEEDS								
a> IR %	4.76	6.63	0.00	5.10	0.00	0.00	0.00	0.00
b> UIR %	0.00	0.36	0.00	0.23	0.00	4.99	4.71	3.71
c> TOTAL %	1.78	2.26	0.00	1.76	0.00	4.66	4.71	3.33
5. OTHER								
a> IR %	0.00	1.66	0.00	1.02	5.80	0.00	0.00	3.67
b> UIR %	9.93	10.42	2.47	8.84	8.74	6.63	7.06	7.23
c> TOTAL %	6.22	7.77	1.75	6.39	8.09	6.19	7.06	6.87
6. GROSS CROPPED AREA								
a> IR %	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00
b> UIR %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
c> TOTAL %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 3 HECTARES , III - ABOVE 3 HECTARES.
2) IR - IRRIGATED , UIR - UNIRRIGATED

TABLE 3.3 (C) : CROPPING PATTERN OF BENEFICIARIES AND NON BENEFICIARIES (LATUR)

ITEMS	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
1. CEREALS								
a> IR %	72.73	65.71	34.16	39.10	42.56	35.00	29.70	31.81
b> UIR %	25.15	56.90	33.41	35.01	69.44	68.75	52.55	55.93
c> TOTAL %	32.55	60.22	33.70	36.50	51.94	60.71	43.60	46.47
2. PULSES								
a> IR %	18.18	0.00	20.87	18.42	11.90	45.00	30.20	28.95
b> UIR %	41.32	24.14	36.24	35.50	11.11	21.88	25.48	24.24
c> TOTAL %	37.72	15.05	30.36	29.30	11.63	27.38	27.33	26.09
3. CASH CROPS								
a> IR %	0.00	5.71	23.34	20.52	17.86	10.00	15.35	15.26
b> UIR %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
c> TOTAL %	0.00	2.15	8.93	7.45	11.63	2.38	6.01	5.99
4. OIL SEEDS								
a> IR %	9.09	28.57	21.63	21.97	27.68	10.00	24.75	23.98
b> UIR %	33.53	18.97	30.35	29.48	13.89	9.38	21.97	19.57
c> TOTAL %	29.72	22.58	27.02	26.76	22.87	9.52	23.06	21.30
5. OTHER								
a> IR %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
b> UIR %	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.25
c> TOTAL %	0.00	0.00	0.00	0.00	1.94	0.00	0.00	0.15
6. GROSS CROPPED AREA								
a> IR %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
b> UIR %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
c> TOTAL %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.
2) IR - IRRIGATED , UIR - UNIRRIGATED

TABLE 3.3 (D) : CROPPING PATTERN OF BENEFICIARIES AND NON BENEFICIARIES (WASHIK)

ITEMS	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	IIa	IIIa	ALL
1. CEREALS								
a> IR %	16.21	32.77	27.22	26.46	55.49	39.97	78.79	50.73
b> UIR %	100.00	100.00	84.87	86.05	84.76	88.89	100.00	92.20
c> TOTAL %	18.61	34.97	41.54	36.05	63.42	56.35	92.31	66.67
2. PULSES								
a> IR %	0.00	0.00	7.78	4.16	2.83	0.00	0.00	1.01
b> UIR %	0.00	0.00	5.04	4.65	0.00	11.11	0.00	4.55
c> TOTAL %	0.00	0.00	7.10	4.24	2.06	3.72	0.00	2.37
3. CASH CROPS								
a> IR %	62.49	56.50	48.75	53.56	26.95	44.76	9.09	33.60
b> UIR %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
c> TOTAL %	60.70	54.64	36.64	44.94	19.65	29.77	3.30	20.69
4. OIL SEEDS								
a> IR %	16.58	6.78	11.67	11.37	14.72	11.27	9.09	12.22
b> UIR %	0.00	0.00	2.52	2.33	15.24	0.00	0.00	3.25
c> TOTAL %	16.11	6.56	9.39	9.92	14.86	7.50	3.30	8.77
5. OTHER								
a> IR %	4.72	3.95	4.58	4.44	0.00	4.00	3.03	2.44
b> UIR %	0.00	0.00	7.56	6.98	0.00	0.00	0.00	0.00
c> TOTAL %	4.58	3.83	5.32	4.85	0.00	2.66	1.10	1.50
6. GROSS CROPPED AREA								
a> IR %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
b> UIR %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
c> TOTAL %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.
IIa - 2 TO 3 HECTARES , IIIa - ABOVE 3 HECTARES

2) IR - IRRIGATED , UIR - UNIRRIGATED

the beneficiaries opt for a yearly crop like sugarcane. The higher intensity of cropping can be seen as a characteristic feature of HCS and FS but it is not so in the CIS probably by design. This is also corroborated by the per cent of irrigation prevailing in HCS and FS area.

The changes in cropping pattern also match with the expected changes due to schemes. Most of the beneficiaries as well as non-beneficiaries have about half of the area allocated to cereals. Especially large part of the rainfed area is used for cereals except in the case of Nashik. Cash crops, pulses and oilseeds are preferred in irrigated cropping pattern. Among the size classes, the diversion to cash crops is observed more in the size of holding above 4 hectares. Again in the CIS, we find that Latur farmers have larger share of area under oilseeds and pulses in the beneficiary group. But then the difference between the two groups is extremely narrow allowing a room to raise doubts about the role of CIS in diverting the crop pattern. Moreover, the changes observed in the crop pattern through CIS are mostly momentary in nature and stabilize only with the help of other policy combinations such as price support, marketing and processing. On the other extreme are the HCS which induce change in cropping pattern through irrigation. The high cost equipments like sprinkler or drip irrigation are specialized instruments and can be used economically for certain crops. Mainly in the Nashik region, the grape cultivation has been developed over/years. Moreover, it also has strong vertical linkages upto final

processing. Therefore, it is not surprising that these equipments are used here more effectively towards grape cultivation. Almost half of the irrigated area of beneficiaries goes under cash crops. Small farmers (having holding size below 2 hectares) also did not remain behind. More than 60 per cent of the gross cropped area in this group is allotted to cash crops in HCS area. The special component scheme allows the beneficiaries to choose the scheme from among the suggestions made by officials at BDO office. Our sample beneficiaries unanimously chose well irrigation with/or a pipeline for irrigation. This also provides additional irrigation and hence the changes here are due to the direct capital subsidy for irrigation. Here also we find that the cash crops dominate the cropping pattern in the beneficiaries' group. In Akola district, ^{the}the cotton development programme, subsidies do not seem to have induced larger changes in favour of cotton. At this point, it must be noted that it is the composition rather than quantum of subsidies that decides the changes in the cropping pattern. The components like spray pumps, fertilizers and pesticides are many times used for different crops rather than the intended ones. Therefore, the changes in crop pattern do not reflect the impact of subsidies when such components are provided.

4.4 Input Use Structure

By the very definition, subsidies are supposed to alter the input structure in six ways. Firstly, provision of subsidy in the form of a cheaper input or direct

provision of input reduces the input cost for the group of beneficiary in the case of input under reference. Secondly, if the subsidies are provided for the input like irrigation in the form of share of capital costs, then the input use rate increases due to change in the cropping pattern and methods of cultivation. Thirdly, provision of subsidy on certain crucial inputs results in an increase in the net profits for the cultivators. This induces higher use of mechanical inputs. Fourthly, the increased income leads to withdrawal of family labour and a corresponding increase in the hired labour component creating larger employment opportunities. Fifthly, if the subsidy is provided on one of the inputs in the structure then this is usually accompanied by a corresponding increase in complementary inputs. Lastly, the process of increasing input intensities and the larger proportion of paid out cost in the aggregate inputs together ^{does} / not allow increase in the wage levels. Moreover, the combination of policies of market interventions along with the input subsidies ^{does} / not allow any change in the real wage structure.

Keeping in view the above framework, we looked into the differences in input structure for the groups of beneficiaries and non-beneficiaries. Tables 3.4(A), 3.4(B), 3.4(C) and 3.4(D) present the input structure for the four cases. Cost of seed per hectare is higher in the group of beneficiaries as compared to non-beneficiaries. Small farmers incur larger expenditure as compared to the other two groups. The seeds cost in Nashik for the group of beneficiaries as well as

TABLE 3.4 (A) : INPUT STRUCTURE OF BENEFICIARIES AND NON BENEFICIARIES (AKOLA)

(IN RS. PER HECTAR OF GROSS CROPPED AREA)

ITEMS (UNIT)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
SEEDS QTY(KG)	12.45	18.42	11.21	13.12	19.40	14.07	16.58	16.13
VALUE (RS.)	241.76	253.84	132.45	187.59	189.04	156.27	157.64	162.64
FYM CART LOAD	9.01	3.77	2.21	4.35	5.00	2.50	8.56	5.66
VALUE (RS.)	341.33	195.21	128.42	199.72	240.80	196.43	315.22	257.53
FERTI. QTY(KG)	170.72	174.66	68.42	118.04	173.49	104.71	80.16	105.78
VALUE (RS.)	436.91	471.03	171.82	305.27	426.51	266.53	231.88	279.09
PESTI. (KG/LIT)	1.55	1.10	1.01	1.18	1.87	1.62	0.54	1.18
VALUE (RS.)	343.73	406.71	222.24	294.39	1884.80	358.93	206.03	558.43
IRRIGATION								
NO OF TIMES	0.00	7.88	0.00	1.63	1.67	0.16	3.10	1.74
VALUE (RS.)	0.00	75.34	0.00	15.55	62.46	32.47	37.36	39.93
FAMILY LABOUR								
MANDAYS	75.15	84.93	32.76	55.04	79.39	42.86	50.14	52.54
HIRED LABOUR								
MANDAYS	56.43	40.62	26.61	37.63	45.25	42.89	26.90	36.13
CHARGES (RS.)	628.27	602.74	418.68	515.76	551.70	494.16	332.88	431.90
BULLOCK LABOUR								
OWNED (ANIMAL DAYS)	3.84	6.64	10.16	7.84	3.96	10.10	9.10	8.57
HIRED (ANIMAL DAYS)	12.27	9.32	1.58	6.02	13.74	4.42	26.22	15.84
HIRED CHARGES (RS.)	624.00	515.07	118.42	335.27	666.20	237.01	143.48	270.45
TOTAL PAID OUT COST	2616.00	2444.59	1192.03	1837.99	3959.06	1709.32	1387.12	1960.04

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.

TABLE 3.4 (B) : INPUT STRUCTURE OF BENEFICIARIES AND NON BENEFICIARIES (AHMEDNAGAR)

(IN RS. PER HECTAR OF GROSS CROPPED AREA)

ITEMS (UNIT)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
SEEDS QTY(KG)	23.20	11.35	14.00	13.97	17.66	9.38	10.35	11.90
VALUE (RS.)	182.58	109.65	86.44	118.52	91.98	77.84	66.47	80.10
FYM CART LOAD	3.02	5.19	3.59	4.51	3.49	1.40	0.00	1.78
VALUE (RS.)	203.56	248.87	165.35	225.47	185.32	69.86	0.00	91.91
FERTI. QTY(KG)	146.67	73.31	30.62	78.70	67.98	44.15	61.76	53.74
VALUE (RS.)	333.78	166.19	68.24	178.43	171.67	116.63	150.82	137.76
PESTI. (KG/LIT)	0.89	1.28	0.00	0.98	0.00	0.00	0.00	0.00
VALUE (RS.)	3.11	18.35	0.00	12.26	0.00	0.00	0.00	0.00
IRRIGATION								
NO OF TIMES	4.71	3.21	2.89	3.42	2.59	0.43	0.00	0.98
VALUE (RS.)	177.78	102.76	96.24	115.05	59.83	23.29	0.00	30.08
FAMILY LABOUR								
MANDAYS	77.16	58.55	48.82	60.12	66.11	53.73	37.65	54.74
HIRED LABOUR								
MANDAYS	50.84	66.62	36.48	58.28	43.53	36.19	12.94	34.64
CHARGES (RS.)	665.33	897.99	550.31	792.67	519.40	477.05	150.59	437.80
BULLOCK LABOUR								
OWNED (ANIMAL DAYS)	3.82	5.91	2.89	4.99	2.07	3.03	0.00	2.28
HIRED (ANIMAL DAYS)	9.51	2.11	1.92	3.40	8.86	8.38	10.24	8.81
HIRED CHARGES (RS.)	528.00	107.27	106.74	182.81	548.51	473.05	588.24	512.77
TRACTOR CHARGES								
OWNED CHARGES (RS.)	0.00	0.00	43.74	7.99	0.00	0.00	0.00	0.00
HIRED CHARGES (RS.)	0.00	6.27	17.50	7.19	0.00	0.00	0.00	0.00
TOTAL PAID OUT COST	2094.13	1657.34	1134.56	1640.38	1576.71	1237.72	956.12	1290.43

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 3 HECTARES , III - ABOVE 3 HECTARES.

TABLE 3.4 (C) : INPUT STRUCTURE OF BENEFICIARIES AND NON BENEFICIARIES (LATUR)

(IN RS. PER HECTAR OF GROSS CROPPED AREA)

ITEMS (UNIT)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
SEEDS QTY(KG)	19.25	15.05	137.36	114.22	137.40	17.68	86.42	81.60
VALUE (RS.)	225.69	138.06	257.03	241.45	893.02	190.24	162.65	224.04
FYM CART LOAD	4.81	4.41	5.98	5.71	5.62	1.49	2.30	2.46
VALUE (RS.)	349.61	258.06	300.58	300.01	292.64	87.50	129.17	136.74
FERTI. QTY(KG)	99.08	72.58	81.70	82.15	123.55	16.96	103.68	94.08
VALUE (RS.)	266.24	197.74	192.96	199.56	321.41	40.77	270.58	244.98
PESTI. (KG/LIT)	1.38	0.43	1.73	1.56	0.63	0.00	0.14	0.16
VALUE (RS.)	137.51	102.42	88.71	94.25	61.53	0.00	11.24	13.77
IRRIGATION								
NO OF TIMES	0.71	1.18	1.58	1.46	15.99	0.42	5.13	5.38
VALUE (RS.)	21.23	79.30	65.36	63.22	375.48	46.13	116.28	127.76
FAMILY LABOUR								
MANDAYS	94.76	61.77	41.82	48.38	135.17	64.17	44.32	54.07
HIRED LABOUR								
MANDAYS	71.62	27.37	33.89	36.31	73.06	21.73	52.86	50.45
CHARGES (RS.)	896.67	353.23	423.38	454.97	921.03	270.83	664.39	633.98
BULLOCK LABOUR								
OWNED (ANIMAL DAYS)	8.85	8.06	8.29	8.31	12.31	10.30	6.36	7.34
HIRED (ANIMAL DAYS)	6.65	1.94	0.10	0.84	6.59	1.61	1.74	2.11
HIRED CHARGES (RS.)	552.02	96.77	10.17	64.54	383.72	80.36	74.61	99.83
TOTAL PAID OUT COST	2448.97	1225.59	1338.19	1418.00	3248.84	715.83	1428.91	1481.11

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.

TABLE 3.4 (D) : INPUT STRUCTURE OF BENEFICIARIES AND NON BENEFICIARIES (NASHIK)

(IN RS. PER HECTARE OF GROSS CROPPED AREA)

ITEMS (UNIT)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	IIa	IIIa	ALL
SEEDS QTY(KG)	19.06	13.61	15.02	15.40	203.06	835.07	308.24	524.03
SEEDS FOR GRAPE(QNT.)	701.50	562.84	271.40	412.87	1992.16	1034.02	0.00	1088.83
VALUE (RS.)	1170.94	1172.40	975.28	1054.37	767.22	1060.87	171.32	769.74
FYM CART LOAD	18.54	70.82	10.71	25.80	14.86	24.99	5.16	17.42
VALUE (RS.)	1572.66	2163.93	1066.28	1405.08	1205.20	2099.95	274.73	1414.17
FERTI. QTY(KG)	1284.90	1568.31	650.31	970.44	350.95	901.12	208.79	577.21
VALUE (RS.)	2882.46	3866.12	1687.89	2393.26	872.42	2169.06	424.18	1379.94
PESTI. (KG/LIT)	15.32	17.21	5.39	9.82	10.33	16.48	0.11	10.90
VALUE (RS.)	3171.51	2778.69	1096.53	1842.09	673.00	1774.06	10.99	1039.98
IRRIGATION								
NO OF TIMES	36.29	25.03	12.71	19.63	13.29	27.59	4.62	18.04
VALUE (RS.)	479.96	290.98	201.98	270.74	295.62	269.01	93.41	237.13
FAMILY LABOUR								
MANDAYS	249.96	265.41	136.05	185.43	139.31	161.56	106.04	142.20
HIRED LABOUR								
MANDAYS	175.81	163.33	90.08	121.74	82.58	124.40	24.51	89.03
CHARGES (RS.)	2512.88	2533.33	1321.71	1805.85	1041.29	1796.92	309.89	1230.13
BULLOCK LABOUR								
OWNED (ANIMAL DAYS)	15.75	7.92	7.43	8.99	7.43	13.61	12.75	11.54
HIRED (ANIMAL DAYS)	0.00	0.00	0.00	0.00	4.46	0.00	0.00	1.35
HIRED CHARGES (RS.)	0.00	0.00	0.00	0.00	254.34	0.00	0.00	76.96
TRACTOR CHARGES								
OWNED CHARGES	0.00	357.92	150.31	171.51	0.00	0.00	0.00	0.00
HIRED CHARGES	157.48	0.00	204.59	149.68	130.47	21.27	0.00	49.48
TOTAL PAID OUT COST	11947.89	13163.39	6704.59	9092.58	5239.55	9191.12	1284.51	6197.53

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.
 IIa- 2 TO 4 HECTARES , IIIa- ABOVE 4 HECTARES.

non-beneficiaries is very high due to inclusion of grapes. But it is interesting that the quantity of grape seeds used by non-beneficiaries is higher than beneficiaries but the value of ^{the} seeds for/beneficiaries is much larger. Relatively higher cost of fertilizer is incurred by the beneficiaries except in the case of Latur. Among the group of farmers, small and medium farmers incur larger per hectare cost as compared to the large ^{the case of} farmers. In/other cost items also, beneficiaries incur higher cost as compared to non-beneficiaries, which signifies higher input intensity in this group. The input intensity is spurred mainly with the subsidy component and the per hectare average cost increases by about 10 per cent except in the case of Nashik, where the per hectare cost of the group of beneficiaries is Rs. 12 thousand as against Rs. 9 thousand ^{the} of/non-beneficiaries. It is quite clear that the larger costs are mainly due to the use of modern inputs.

3.5 Use of Modern Inputs and Employment

Seeds, fertilizers, pesticides and methods of irrigation used by cultivators get included in the components of modern technology. All the subsidies we have considered here deal with these components of new technology. It is expected that the use of inputs like pesticides and fertilizers would help the farmers easily adopting the technology. What we have seen earlier is that the costs per hectare on these inputs are much larger in the group of beneficiaries as compared to non-beneficiaries only with a few exceptions. It is also observed that generally small farmers incur higher per hectare

TABLE 3.5 (A) : USE OF MODERN INPUTS BY BENEFICIARIES AND NON BENEFICIARIES (AKOLA)

ITEMS (UNIT)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
SEEDS QTY(KG)	25.15	28.97	45.88	100.00	21.13	32.77	46.11	100.00
VALUE (RS.)	34.15	27.92	37.92	100.00	20.42	36.08	43.49	100.00
FERTI. QTY(KG)	38.33	30.54	31.13	100.00	28.82	37.18	34.01	100.00
VALUE (RS.)	37.93	31.84	30.23	100.00	26.85	35.87	37.28	100.00
PESTI. (KG/LIT)	34.73	19.16	46.11	100.00	27.84	51.55	20.62	100.00
VALUE (RS.)	30.94	28.51	40.55	100.00	59.31	24.14	16.56	100.00
IRRIGATION								
NO OF TIMES	0.00	100.00	0.00	100.00	16.78	3.50	79.72	100.00
VALUE (RS.)	0.00	100.00	0.00	100.00	27.48	30.53	41.98	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.

TABLE 3.5 (B) : USE OF MODERN INPUTS BY BENEFICIARIES AND NON BENEFICIARIES (AHMEDNAGAR)-

ITEMS (UNIT)		BENEFICIARY GROUP				NON BENEFICIARY GROUP			
		FARM SIZES				FARM SIZES			
		I	II	III	ALL	I	II	III	ALL
SEEDS	QTY(KG)	29.86	51.83	18.31	100.00	42.46	43.86	13.69	100.00
	VALUE (RS.)	27.69	58.99	13.32	100.00	32.86	54.08	13.06	100.00
FERTIL.	QTY(KG)	33.50	59.39	7.11	100.00	36.20	45.71	18.08	100.00
	VALUE (RS.)	33.63	59.39	6.99	100.00	35.66	47.11	17.23	100.00
PESTI. (KG/LIT)	QTY(KG)	16.33	83.67	0.00	100.00	0.00	0.00	0.00	0.00
	VALUE (RS.)	4.56	95.44	0.00	100.00	0.00	0.00	0.00	0.00
IRRIGATION	NO OF TIMES	24.77	59.81	15.42	100.00	75.47	24.53	0.00	100.00
	VALUE (RS.)	27.78	56.94	15.28	100.00	56.92	43.08	0.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 3 HECTARES , III - ABOVE 3 HECTARES.

TABLE 3.5 (C) : USE OF MODERN INPUTS BY BENEFICIARIES AND NON BENEFICIARIES (LATUR)

ITEMS (UNIT)		BENEFICIARY GROUP				NON BENEFICIARY GROUP			
		FARM SIZES				FARM SIZES			
		I	II	III	ALL	I	II	III	ALL
SEEDS	QTY(KG)	1.40	1.44	97.16	100.00	13.33	2.79	83.87	100.00
	VALUE (RS.)	7.75	6.24	86.01	100.00	31.56	10.95	57.49	100.00
FYM	CART LOAD	6.98	8.42	84.60	100.00	18.13	7.81	74.06	100.00
	VALUE (RS.)	9.66	9.39	80.95	100.00	16.95	8.25	74.80	100.00
FERTIL.	QTY(KG)	10.00	9.64	80.36	100.00	10.40	2.32	87.28	100.00
	VALUE (RS.)	11.06	10.81	78.12	100.00	10.39	2.15	87.46	100.00
PESTIL.	(KG/LIT)	7.34	3.01	89.64	100.00	31.71	0.00	68.29	100.00
	VALUE (RS.)	12.10	11.86	76.04	100.00	35.38	0.00	64.62	100.00
IRRIGATION	NO OF TIMES	4.02	8.84	87.15	100.00	23.54	1.00	75.46	100.00
	VALUE (RS.)	2.78	13.69	83.53	100.00	23.27	4.65	72.07	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.

TABLE 3.5 (D) : USE OF MODERN INPUTS BY BENEFICIARIES AND NON BENEFICIARIES (NASHIK)

ITEMS (UNIT)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	IIa	IIIa	ALL
SEEDS QTY(KG)	21.56	20.17	58.28	100.00	11.73	74.90	13.38	100.00
SEEDS FOR GRAPE(QNT.)	29.61	31.12	39.27	100.00	55.36	44.64	0.00	100.00
VALUE (RS.)	19.35	25.38	55.27	100.00	30.16	64.78	5.06	100.00
FERTI. QTY(KG)	23.07	36.89	40.04	100.00	18.40	73.38	8.23	100.00
VALUE (RS.)	20.99	36.87	42.14	100.00	19.13	73.88	6.99	100.00
PESTI. (KG/LIT)	27.19	40.03	32.78	100.00	28.68	71.09	0.23	100.00
VALUE (RS.)	30.00	34.43	35.57	100.00	19.58	80.18	0.24	100.00
IRRIGATION								
NO OF TIMES	32.21	29.10	38.69	100.00	22.30	71.88	5.82	100.00
VALUE (RS.)	30.89	24.53	44.57	100.00	37.72	53.32	-8.96	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.
 IIa- 2 TO 4 HECTARES , IIIa- ABOVE 4 HECTARES.

TABLE 3.6 (A) : EMPLOYMENT PARTICULARS ACROSS SIZE CLASSES (AKOLA)

ITEMS (UNIT)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
FAMILY LABOUR								
MANDAYS	57.11	67.65	55.19	59.40	63.70	49.98	65.08	59.25
HIRED LABOUR								
MANDAYS	42.89	32.35	44.81	40.60	36.30	50.02	34.92	40.75
TOTAL LABOUR								
MANDAYS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.

TABLE 3.6 (B) : EMPLOYMENT PARTICULARS ACROSS SIZE CLASSES (AHMEDNAGAR)

ITEMS (UNIT)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
FAMILY LABOUR								
MANDAYS	60.28	46.78	57.23	50.78	60.29	59.75	74.42	61.25
HIRED LABOUR								
MANDAYS	39.72	53.22	42.77	49.22	39.71	40.25	25.58	38.75
TOTAL LABOUR								
MANDAYS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 3 HECTARES , III - ABOVE 3 HECTARES.

TABLE 3.6 (C) : EMPLOYMENT PARTICULARS ACROSS SIZE CLASSES (LATUR)

ITEMS (UNIT)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
FAMILY LABOUR								
MANDAYS	56.95	69.30	55.23	57.13	64.91	74.71	45.61	51.74
HIRED LABOUR								
MANDAYS	43.05	30.70	44.77	42.87	35.09	25.29	54.39	48.26
TOTAL LABOUR								
MANDAYS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.

TABLE 3.6 (D) : EMPLOYMENT PARTICULARS ACROSS SIZE CLASSES (NASHIK)

ITEMS (UNIT)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	IIa	IIIa	ALL
FAMILY LABOUR								
MANDAYS	58.71	61.90	60.16	60.37	62.78	56.50	81.23	61.50
HIRED LABOUR								
MANDAYS	41.29	38.10	39.84	39.63	37.22	43.50	18.77	38.50
TOTAL LABOUR								
MANDAYS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.
IIa- 2 TO 4 HECTARES , IIIa- ABOVE 4 HECTARES.

costs on these inputs except in the case of Latur.

We have presented in Tables 3.5 and 3.6 the use of modern inputs across farm sizes as share of the total inputs used, and the share of family and hired labour in total labour use. With the exception of Latur, the other three districts showed larger use of fertilizers and pesticides on the farms of beneficiaries. Similarly the higher price of seed in the group of beneficiary also indicates better quality of seed used by them. Nashik shows a unique example of the use of modern irrigation practices where the beneficiaries take to cultivation of grapes, which is a high value crop. This shows very high cost per hectare incurred in Nashik, Interestingly the costs of seeds, fertilizers, pesticides are much higher even though almost similar quantities are used by both the groups. It is an indication of better quality of inputs used by the group of beneficiaries.

Usually higher labour intensity is found on the farms of beneficiary farmers. It ranges between 111 and 222 mandays per hectare. The difference between the groups amounts to be about 99 mandays per hectare. Higher labour intensity signifies larger employment generation in the group of beneficiaries. However, the increased demand for labour did not indicate substantially higher wages and the wage rates continue to be depressed.

3.6 Production, Income and Asset Holding

The crucial aspect of the subsidy policy is the generation of higher production, income and asset creation.

TABLE 3.7 (A) : PRODUCTIVITY OF CROPS PER HECTARE FOR BENEFICIARIES AND NON BENEFICIARIES (AKOLA)

ITEMS (UNITS)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	I	FARM SIZES			I	FARM SIZES		
		II	III	ALL		II	III	ALL
1. CEREALS								
QUANTITY IN KGS	1659.48	1307.69	1208.33	1330.56	1583.33	1234.38	1990.20	1691.01
VALUE IN RS.	3101.29	2746.15	2295.83	2550.94	3350.00	2524.22	3928.92	3384.83
2. PULSES								
QUANTITY IN KGS	455.47	386.90	516.30	472.59	312.20	496.10	390.63	439.08
VALUE IN RS.	3224.70	2059.52	2578.80	2541.90	1992.68	2818.60	2539.06	2629.86
3. COTTON								
QUANTITY IN KGS	721.26	705.88	517.86	613.95	718.75	434.03	406.25	496.58
VALUE IN RS.	5566.05	6048.53	4533.33	5137.39	5886.84	3895.49	3312.50	4181.15
4. CASH CROP								
QUANTITY IN KGS	1000.00	94000.00	0.00	75400.00	0.00	0.00	2894.74	2894.74
VALUE IN RS.	1340.00	11500.00	0.00	9468.00	0.00	0.00	7368.42	7368.42
5. OIL SEEDS								
QUANTITY IN KGS	1745.22	0.00	0.00	1745.22	833.33	0.00	500.00	700.00
VALUE IN RS.	17799.36	0.00	0.00	17799.36	8333.33	0.00	4000.00	6600.00
6. OTHER CROPS								
QUANTITY IN KGS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VALUE IN RS.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7. GROSS VALUE OF OUTPUT PER HECTARE	5617.30	4686.30	3353.55	4209.31	5327.55	3260.91	3813.18	3871.86

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.

TABLE 3.7 (B) : PRODUCTIVITY OF CROPS PER HECTARE FOR BENEFICIARIES AND NON BENEFICIARIES (AHMEDNAGAR)

ITEMS (UNITS)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
1. CEREALS								
QUANTITY IN KGS	603.66	641.29	256.90	546.01	554.65	353.07	141.79	378.35
VALUE IN RS.	1921.59	1976.42	637.01	1658.13	1542.41	1020.48	402.99	1074.64
2. PULSES								
QUANTITY IN KGS	558.14	649.93	520.83	624.00	385.71	180.00	50.00	224.52
VALUE IN RS.	2674.42	2903.66	2708.33	2845.00	2145.71	1389.38	325.00	1471.48
3. CASH CROP								
QUANTITY IN KGS	0.00	6687.50	4208.33	6364.13	0.00	7700.00	0.00	6160.00
VALUE IN RS.	0.00	6656.25	18333.33	8179.35	0.00	12275.00	0.00	9820.00
4. OIL SEEDS								
QUANTITY IN KGS	1750.00	1138.89	0.00	1250.00	0.00	321.43	37.50	258.33
VALUE IN RS.	10435.00	8055.56	0.00	8488.18	0.00	2285.71	375.00	1861.11
5. OTHER CROPS								
QUANTITY IN KGS	357.14	822.58	500.00	725.00	208.00	190.86	200.00	198.11
VALUE IN RS.	1285.71	2338.71	1000.00	2087.50	584.00	672.04	600.00	630.73
6. GROSS VALUE OF OUTPUT PER HECTARE	2177.24	2500.63	1101.92	2187.02	1513.26	1396.64	408.24	1274.49

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 3 HECTARES , III - ABOVE 3 HECTARES.

TABLE 3.7 (C) : PRODUCTIVITY OF CROPS PER HECTARE FOR BENEFICIARIES AND NON BENEFICIARIES (LATUR)

ITEMS (UNITS)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
1. CEREALS								
QUANTITY IN KGS	782.61	607.14	787.50	754.66	1175.37	558.82	1015.56	952.77
VALUE IN RS.	2150.00	1433.93	2408.62	2213.99	2193.28	1234.31	2283.78	2099.01
2. PULSES								
QUANTITY IN KGS	619.14	1446.43	312.44	408.77	333.33	219.57	521.28	473.82
VALUE IN RS.	4563.79	12732.14	2395.81	3206.89	2458.33	1628.26	3738.12	3407.50
3. CASH CROPS								
QUANTITY IN KGS	0.00	100000.00	49195.12	50795.28	42000.00	187.50	44260.48	41652.56
VALUE IN RS.	0.00	30000.00	13867.89	14375.98	12875.00	1575.00	18334.68	16635.26
4. OIL SEEDS								
QUANTITY IN KGS	898.81	821.43	551.75	608.55	720.34	281.25	1135.71	1051.15
VALUE IN RS.	7619.05	6684.52	5130.38	5502.74	6652.54	2343.75	10206.51	9451.19
5. OTHER CROPS								
QUANTITY IN KGS	0.00	0.00	0.00	0.00	1000.00	0.00	0.00	1000.00
VALUE IN RS.	0.00	0.00	0.00	0.00	5000.00	0.00	0.00	5000.00
6. GROSS VALUE OF OUTPUT PER HECTARE	4686.13	4934.68	4163.62	4291.09	4540.31	1455.95	5472.63	4880.99

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.

TABLE 3.7 (D) : PRODUCTIVITY OF CROPS PER HECTARE FOR BENEFICIARIES AND NON BENEFICIARIES (WASHIK)

ITEMS (UNITS)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	IIa	IIIa	ALL
1. CEREALS								
QUANTITY IN KGS	3346.15	1906.25	1331.66	1640.14	1660.16	1952.83	642.86	1456.15
VALUE IN RS.	5586.54	3585.94	3733.67	3867.65	2981.77	3475.09	1494.64	2709.56
2. PULSES								
QUANTITY IN KGS	0.00	0.00	430.59	430.59	580.00	1285.71	0.00	1100.00
VALUE IN RS.	0.00	0.00	3676.76	3676.76	3160.00	1571.43	0.00	1989.47
3. CASH CROPS								
QUANTITY IN TONNES	12.06	17.25	15.03	14.95	18.11	75.80	18.33	57.14
VALUE IN RS.	65798.00	105351.00	84402.96	85838.16	65151.26	63200.89	36666.67	62800.12
4. OIL SEEDS								
QUANTITY IN KGS	2755.56	1750.00	1666.67	1987.42	916.67	1843.97	400.00	1245.01
VALUE IN RS.	20400.00	10833.33	12288.89	14364.78	6000.00	13900.71	3600.00	8968.66
5. FODDER IN TONNES	609.38	921.43	205.89	401.03	0.00	285.00	750.00	562.50
VALUE IN RS.	18750.00	23571.43	7156.86	12017.99	0.00	11000.00	25000.00	20000.00
6. GROSS VALUE OF OUTPUT PER HECTARE	45124.70	60434.97	34271.88	42135.15	15982.66	22166.99	2981.87	15933.18

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.
IIa- 2 TO 3 HECTARES , IIIa- ABOVE 3 HECTARES.

2) Fodder data were available in pendhis (bundles) of approximately 15 kg. each.

Here we attempt to analyse these aspects for the group of beneficiaries and non-beneficiaries. The largest gross income and production is generated by the group of beneficiaries in Nashik district. This was possible because of the well developed cultivation practices for grapes. The gross value of output is in the range of Rs. 30 to Rs. 60 thousands. It is obvious that in all the four districts cash crops constitute major portion of the income followed by oilseeds, pulses and cereals. Ahmednagar has the conspicuous distinction of having generated lower level of income and relatively higher cost in the group of beneficiaries. Whereas, Akola and Latur form the middle order in the income generation hierarchy. The gross value of production ranges between Rs. 3 and Rs. 5.6 thousands in Akola; Rs. 1 and Rs. 2.5 thousands in Ahmednagar; Rs. 4 and Rs. 5 thousands in Latur and Rs. 34 and Rs. 60 thousands in Nashik districts. Therefore the subsidies on drip/sprinkler sets seem to be most income generating followed by special crop programmes. It is intriguing that the flexible subsidy scheme operating in Ahmednagar did not generate sufficient income. The probable reason for such performance is the market access and bargaining power of the beneficiaries.

Among the group of beneficiaries and non-beneficiaries, it is always that the small farmers could generate highest gross value of output per hectare as compared to the other two groups with an exception of non-beneficiary group in Nashik. The interesting outcome of this fact is the equity impact of the subsidies. If small farm households were able to

TABLE 3.8 (A) : ASSET HOLDINGS PER HOUSEHOLD (AKOLA)

ITEMS (UNITS)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
FARM ASSETS	5.84	5.56	7.62	6.33	3.21	12.57	5.94	7.82
NON FARM ASSETS	56.07	48.61	76.52	60.54	75.58	64.56	55.27	63.98
LIVE STOCK	38.10	45.83	15.86	33.13	21.21	22.87	38.80	28.20
TOTAL ASSETS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.

TABLE 3.8 (B) : ASSET HOLDINGS PER HOUSEHOLD (AHMEDNAGAR)

ITEMS (UNITS)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
FARM ASSETS	0.60	4.78	3.10	3.42	0.15	1.94	0.00	1.04
NON FARM ASSETS	84.55	67.77	34.07	70.00	71.32	72.75	97.17	74.07
LIVE STOCK	14.86	27.46	62.83	26.58	28.53	25.31	2.83	24.90
TOTAL ASSETS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 3 HECTARES , III - ABOVE 3 HECTARES.

TABLE 3.8 (C) : ASSET HOLDINGS PER HOUSEHOLD (LATUR)

ITEMS (UNITS)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	II	III	ALL
FARM ASSETS	10.97	6.50	6.19	6.84	26.04	1.75	23.42	19.75
NON FARM ASSETS	72.08	67.62	51.56	56.35	62.61	71.77	42.64	53.29
LIVE STOCK	16.95	25.88	42.25	36.82	11.34	26.49	33.94	26.97
TOTAL ASSETS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.

TABLE 3.8 (D) : ASSET HOLDINGS PER HOUSEHOLD (NASHIK)

ITEMS (UNITS)	BENEFICIARY GROUP				NON BENEFICIARY GROUP			
	FARM SIZES				FARM SIZES			
	I	II	III	ALL	I	IIa	IIIa	ALL
FARM ASSETS	1.72	4.08	1.52	2.25	2.58	2.10	2.16	2.34
NON FARM ASSETS	78.71	79.78	83.34	80.96	84.31	69.64	75.10	77.34
LIVE STOCK	19.57	16.13	15.14	16.80	13.11	28.26	22.74	20.32
TOTAL ASSETS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.
IIa- 2 TO 3 HECTARES , IIIa- ABOVE 3 HECTARES.

generate larger income than those of others, it would be possible for them to cross the class barrier easily. But this does not seem to happen because of the price differentials in the factor market. The small farmers spend more on the cost of cultivation per hectare. Another important aspect of the gross value of output is its generation per unit of cost invested. Again it is highest in Nashik district followed by Latur, Akola and Ahmednagar in that order. The income generated per unit of cost ranges between Rs. 1 and Rs. 4 across the size classes and the districts and the difference between groups of beneficiaries and non-beneficiaries shows the yield per unit of cost. The beneficiary group seems to have greater advantage in this income generation process and the comparison between the groups suggests that the beneficiaries earn almost double as compared to non-beneficiaries.

Asset formation is one of the important outcome of the policy changes. The surplus income generated is usually invested in the assets. We have presented in Table 3.8 the distribution of total assets into three groups of Farm, Non-farm and Livestock. It comes out very clearly that the beneficiaries tend to invest more in livestock as compared to non-beneficiaries except in the case of Nashik. In the district of Nashik the tendency seems to be more towards non-farm assets. There is no evidence of any definite trend in asset formation across the size of the farms. The inclination towards non-farm assets is very clear both for beneficiaries and non-beneficiaries.

3.7 Impact Assessment of Subsidies: Farmers' Perception

In any of the impact studies it is possible that the most crucial aspects remain unanswered especially due to the fact that certain variables are not amenable to quantification. This has prompted us to record the opinion of beneficiaries about the major impact parameters. Table 3.9 gives the farmers' perception about the usefulness of the subsidy scheme.

Table 3.9 : Farmers' Perception About the Usefulness of Subsidies

Criteria	(Percent frequency)				
	Akola	Ahmed-nagar	Latur	Nashik	All
1) Subsidies help in:					
a) Using higher level of inputs	72	72	76	56	69
b) Reducing the cost of cultivation	12	100	48	60	55
c) Increasing the farm income	32	28	52	76	47
d) Easier access to New Technology	56	44	56	56	53
e) Changing cropping pattern	80	36	88	76	70
2) Present subsidy scheme should be continued	68	92	88	52	75

Majority of the farmers felt that the intensity of input use has increased due to subsidies. Many times this was because they have to supplement the technology which is brought within their reach, with the help of subsidies. It

is only a sizable number of Nashik farmers who felt that the subsidies are not the only input increasing factors. In the case of Nashik it is mainly the choice of crop that has caused the increased input intensity. Farmers across regions have differential opinion about the role of subsidies in the reduction of input costs. Cultivators with irrigation linked subsidies have expressed the opinion that their cost of production has reduced. Possibly their view involves also the fixed cost on irrigation equipment and irrigation. Latur and Akola farmers expressed as a sizable group that the cost does not get reduced. This is not perplexing even on the background that in both the cases subsidies involved fertilizer and pesticides because it is only a portion of the inputs^{that}/is supplied on subsidy whereas the remaining requirement has to be met from the market. Majority of the Nashik and Latur farmers expressed subsidies as income increasing whereas, the Akola and Ahmednagar cultivators have their reservations about the impact. But majority of them almost unanimously hailed the policy as the one which makes the technology accessible to them and that this helps in changing the cropping pattern. They also strongly expressed that the present schemes must continue with suitable administrative modifications.

We further tried to ascertain the impact of the withdrawal of fertilizer subsidy on different parameters as perceived by the farmers. Instead of asking questions about reduction or increased dose of fertilizers, we asked questions directly ascertaining their responses. The

TABLE 3.9 : NET INCOME (N.I.) OF FARM HOUSEHOLDS

A : AKOLA

ITEMS	BENEFICIARY			NON BENEFICIARY		
	G.V.O.	P.O.C.	N.I.	G.V.O.	P.O.C.	N.I.
I	5617.30	2616.00	3001.30	5327.55	3959.06	1368.49
II	4686.30	2444.59	2241.71	3260.91	1709.32	1551.59
III	3353.55	1192.03	2161.52	3813.18	1387.12	2426.06
ALL	4209.31	1837.99	2371.32	3871.86	1960.04	1911.82

B : AHMEDNAGAR

ITEMS	BENEFICIARY			NON BENEFICIARY		
	G.V.O.	P.O.C.	N.I.	G.V.O.	P.O.C.	N.I.
I	2177.24	2094.13	83.11	1513.26	1576.71	-63.45
II	2500.63	1657.34	843.29	1396.64	1237.72	158.92
III	1101.92	1134.56	-32.64	408.24	956.12	-547.88
ALL	2187.02	1640.38	546.64	1274.49	1290.43	-15.94

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.
 2) GROSS VALUE OF PRODUCTION(G.V.O.) - PAID OUT COSTS(P.O.C.)

TABLE 3.9 (contd.) : NET INCOME (N.I.) OF FARM HOUSEHOLDS

C : LATUR

ITEMS	BENEFICIARY			NON BENEFICIARY		
	G.V.O.	P.O.C.	N.I.	G.V.O.	P.O.C.	N.I.
I	4686.13	2448.97	2237.16	4540.31	3248.84	1291.47
II	4934.68	1225.59	3709.09	1455.95	715.83	740.12
III	4163.62	1338.19	2825.43	5472.63	1428.91	4043.72
ALL	4291.09	1418.00	2873.09	4880.99	1481.11	3399.88

D : NASHIK

ITEMS	BENEFICIARY			NON BENEFICIARY		
	G.V.O.	P.O.C.	N.I.	G.V.O.	P.O.C.	N.I.
I	45124.00	11947.89	33176.11	15982.66	5239.55	10743.11
II	60434.97	13163.39	47271.58	22166.99	9191.12	12975.87
III	34271.88	6704.59	27567.29	2981.87	1284.51	1697.36
ALL	42135.15	9092.58	33042.57	15933.18	6197.53	9735.65

NOTE : 1) SIZE CLASSES ARE : I - UP TO 2 HECTARES , II - 2 TO 4 HECTARES , III - ABOVE 4 HECTARES.
 2) GROSS VALUE OF PRODUCTION(G.V.O.) - PAID OUT COSTS(P.O.C.)

results thus indicate only the decision criteria of the farmers but not/^{the} actual decisions. The probable influence of the withdrawal is likely to be on four components. Firstly, the increase or decrease in fertilizer subsidy would change the input intensities. The changes would include both year to year fluctuations as well as those due to deliberate decisions. Secondly, as a result of these, the productivity would undergo a change. Thirdly, alterations in input subsidies would affect the level of technology adoption. Lastly, the wage rates, income generation, structure of employment and other non-farm activities would undergo changes.

Table 3.11 summarizes the responses of farmers to the withdrawal of fertilizer subsidy as reflected by increased fertilizer prices. All the cultivators indicated changes in the input intensities. With the existing level of prices (pre-withdrawal of subsidy) they were divided almost equally on either side of/increase/decrease of the input intensities. Quite possibly, such equal division is due to the experiences of the bad season. But with increased prices of fertilizers almost 94 per cent of the cultivators indicated 'slight to high' reduction in input intensity. The most favoured policy change was a further decrease in input prices. A natural outcome of the decreased input intensity would be the changes in productivity levels and adoption of technology. It is very clear from the responses that productivity would slide down and the price hike would distort the technology package. In order to keep the total paid out cost within their reach

Table 3.11 : Responses of Farmers to Change in Fertilizer Prices

Condition	Direction	Levels of Change		
		Slight	Moderate	High
<u>(A) Frequency of Cultivators Indicating Change in Input Intensities (Per cent to Total Responses)</u>				
1) With Existing Fertilizer Prices	Increase	16	32	4
	Decrease	37	9	2
2) With Decreased Prices of Fertilizers	Increase	22	36	40
	Decrease	1	1	-
3) With Increased Fertilizer Prices	Increase	3	3	-
	Decrease	27	35	32
<u>(B) Frequency of Cultivators Indicating Changes in Productivity (Per cent to Total Respondents)</u>				
1) With Existing Fertilizer Prices	Increase	34	45	-
	Decrease	16	5	-
2) With Decreased Prices of Fertilizers	Increase	27	35	38
	Decrease	-	-	-
3) With Increases Prices of Fertilizers	Increase	2	1	-
	Decrease	37	40	20
<u>(C) Frequency of Cultivators Indicating Changes in Technology Adoption (Per cent to Total Respondents)</u>				
1) With Existing Fertilizer Prices	Increase	50	39	5
	Decrease	6	-	-
2) With Decreased Prices of Fertilizers	Increase	49	38	13
	Decrease	-	-	-
3) With Increased Prices of Fertilizers	Increase	8	1	-
	Decrease	47	21	23

(after the price hike) they would prefer to adopt one of the following eight alternatives, viz., (i) reduce the use of fertilizers, (ii) reduce the use of hired labour and increase family labour participation, (iii) use of more manures, (iv) hired out labour, (v) save on the new variety of seeds, (vi) diversify to non-farm activities, (vii) change the crop pattern and (viii) save on other costs. One cannot overlook that these decision criteria emerge from across a heterogeneous region and farmers and hence must have regional peculiarities. Well endowed regions which have reached the peak of input intensities may not feel the changes of any consequence.

Table 3.12 : Difficulties Faced by Farmers While Obtaining Subsidized Inputs

Criteria	(Per cent frequency)			
	Akola	Ahmed-nagar	Latur	Nashik
1. Delay in disbursement	32	36	36	44
2. Deliberate harassment	8	Nil	4	Nil
3. Required varieties are not available	48	Nil	36	Nil
4. Quantity of supply is not adequate	64	48	52	Nil
5. Good quality of inputs are not available	52	4	64	8

At the village level cultivators face quite a few difficulties while obtaining the subsidized inputs. Table 3.12 summarizes the responses of the farmers and the major difficulties faced by them. Delay in the distribution/disbursement

of subsidized inputs is the most often encountered problem. Akola and Latur farmers had difficulties in receiving the required variety of the inputs and proper quality of the supplied inputs. The quality of some pesticides supplied in Latur region was so bad that the farmers had to buy other pesticide from market but in the meanwhile incurred losses. The nozzle of the spray pumps always created problems from the first day itself. Sometimes, the seeds and pesticides were not supplied at proper time which caused losses to the farmers. Many of the farmers felt that the quantity of inputs supplied was / not sufficient. They also felt that the same persons should not receive benefits over years. But the benefits can be gradually reduced to include new farmers. This would enable spread of the new technology. Another important problem felt severely by the farmers is about the distribution network. The distribution points should be within a few kilometres from each village, which would reduce the transaction cost.

3.8 Conclusions

In this chapter we have analysed the micro level impact of subsidies. As indicated earlier, the impact differs across regions and by design of subsidies. We have noted distinctive features in the micro level analysis. Firstly, there are no broad changes in the land use pattern but cropping intensity is higher in the group of beneficiaries. The crop pattern changed in favour of cash crops. This change was more prominent in Nashik and Latur. Secondly, the input use structure is different in the group of beneficiaries. Higher

input intensity is quite evident. Use of family labour has gone down in the group of beneficiaries as compared to non-beneficiaries. Thirdly, the modern inputs like fertilizers, seeds and pesticides are more intensively used in the group of beneficiaries. The level of adoption of new technology is thus higher in this group. Fourthly, the production, income and asset formation is at a very high level in the group of beneficiaries. The beneficiaries have output per unit of input almost double that of the non-beneficiaries. The savings generated ^{are} / mostly invested in non-farm assets and livestock. Lastly, the impact assessment as perceived by the farmers bring out quite a few interesting issues. Most important of these are the reactions that they gave if the subsidies on fertilizers are withdrawn. The difficulties encountered by the farmers give directions for the administrative corrections in the implementation of the policy.

CHAPTER IV

SUMMARY AND CONCLUSIONS

4.1 An Overview

Agricultural policy since independence has been directed towards correcting the inter-regional and inter-group inequalities. The most pertinent problem exists about the access to resources. Technological change of mid-sixties brought this problem under sharp focus because of the differential impact of technology. Price policy as an effective instrument kept the growth in farm prices under control. It was supported by the network of public distribution system and hence the net income of those with small size of holding did not improve substantially. This situation called for urgent steps towards correcting the wide ranging inequalities. ^{Introduction} \angle of target group specific programmes was a step towards this. On the other side, in the farm calculus the new technology had injected the element of cost push. The new inputs were more ^{cash} \angle intensive and hence only partial package recommendations could be applied by small and marginal farmers. All ^{this} \angle necessitated Government intervention in the factor market in order to bring down the prices of crucial inputs and make these affordable for the common peasants.

Subsidies for agricultural inputs must be viewed on this background. In 1980-81 the total input subsidies were of the tune of Rs. 65,614.28 million and ^{they} \angle increased to

Rs. 1,17,930.26 million by 1986-87. (Gulati, 1989) Major components of these subsidies were fertilisers, irrigation, credit and electricity. Among these, the fertiliser subsidy which was at Rs. 5,050 millions in 1980-81 increased to Rs. 46,018 millions by 1989-90. The growth rate in the fertiliser subsidy during 1971-72 to 1989-90 works out to be 26.5 per cent (Gulati, 1992). Since, these are directly discernible, they attracted the attention of the policy maker. But if we look at the picture of subsidies in aggregate and share of fertiliser subsidy in them, it is only about 19.4 per cent (this is ^{the} share of real economic cost of fertiliser subsidies totalled over 1980-81 - 1986-87 to real economic cost of total subsidies). In fact the other three components seem to have evaded the debate because of the involvement of uneasy issues.

also
 We have also another component of subsidies which directly reach the farmers through various programmes. In Maharashtra we have sizeable expenditure incurred on these direct subsidies.
 One great advantage of this group of subsidies is that these are targeted to the group of beneficiaries. Therefore, while attempting any analysis of impact, these offer better analytical basis than the indirect subsidies. Maharashtra does not belong to ^{either} of the groups of highly or lowly subsidized states. Its performance is more at average level. But as an average (1980-81 to 1986-87) the state has consumed Rs. 5,942.56 million as indirect subsidies. In across state growth performance, it is a state with about middle level growth

performance. Keeping in view these facts it is interesting to look ^{into} _∟ the impact of fertilizer subsidies on agricultural development of the state.

4.2 Objectives

The focus of the present study is to analyse the impact of subsidies on agricultural development of Maharashtra as seen through the direct subsidies paid to the farmers. The study is conducted both at macro and micro level taking help of the data at secondary level.

Specific objectives of the study are:

(i) To quantify level and spread of different types of subsidies in the state and districts and to work out their macro effects on agricultural development.

(ii) To assess the quantum of subsidies availed, the extent of utilization and their impact on different classes of farmers' ^{regarding} asset formation, income generation and employment.

(iii) To study the impact of subsidies on input use structure, crop pattern, production pattern of different categories of farmers.

(iv) To assess the usefulness of subsidies in adoption of modern technology.

(v) To review the process of administration and disbursement of subsidies and suggest methods to improve upon these.

4.3 Methodology and Coverage

The present study is conducted both at macro and micro level. We have initially attempted the analysis of the

data on subsidies across states of the country to work out the relationship between agricultural development and level of subsidies. A case for Maharashtra state has been **taken up** for further indepth study of the impact of subsidies.

Maharashtra happens to be one of the states falling somewhere in the middle, both on the count of level of total input subsidies and agricultural development in the inter-state comparison. Further, we have worked out a district level analysis of agricultural development of Maharashtra and attempted a link of this with the inter-district level of subsidies. This was attempted to bring out the lagging and leading regions in the inter-district scenario.

Four subsidy schemes were chosen from the state in order of their financial coverage and direct relevance to agricultural development. One district was chosen for each of these schemes having **incurred** highest expenditure during 1988-89 to 1990-91. The schemes selected were (i) National Oilseed Development Programme and National Pulses Development Programme, (ii) Sprinkler and Drip Irrigation Scheme, (iii) Special Component Programme, (iv) Intensive Cotton Development Programme. The districts selected were Latur, Nasik, Ahmednagar and Akola respectively. The choice of the block was also done in a similar manner, i.e., a block with the highest expenditure and largest number of beneficiaries was chosen. After selecting the block, we listed the beneficiaries under the scheme to select randomly the required number of beneficiaries, Thus a three stage random sampling

method was followed for the choice of the beneficiaries. Non-beneficiaries were selected as matching sample from the same region as that of the beneficiaries and also from the same villages. The data collected thus were analysed on the basis of ^{the} tables dividing the cultivator households into three groups namely (i) below 2 hectare of holding, (ii) Between 2 to 4 hectares and above 4 hectares of ownership/operational holding. (No tenancy cases were encountered).

4.4 Main Findings and Policy Implications

4.4.1 A review of the selected studies indicated that the subsidies have been one of the important policy instruments. However, keeping in view the mounting burden of fiscal deficits it is necessary to trim down the expenditure. The choice of fertilizer subsidy for cutting the expenditure is not fully justified on the count that irrigation, power and credit subsidies constitute large proportion of the aggregate subsidies. A better combination would be a proper input pricing policy combined with the cut in fertilizer subsidies which can help balancing the input structure.

4.4.2 It has been pointed out in some of the studies that the input subsidies do not reach totally to the intended targets. A large part of subsidies on fertilizers go to industries and a sizable portion of the recurring expenditure on irrigation goes mainly to administrative costs which are increasing rapidly. Moreover, in the inter-state distribution of subsidies, some states have been receiving consistently larger share of the subsidies. The reason behind this is the growth of infrastructure in the states and the current level of input use.

Then in that case, the subsidy policy should have been directed to correct the inter-state imbalances in use rates by allowing larger state level allocation of subsidies ^{to lagging states} for crucial inputs.

4.4.3 The relationship between growth of subsidies and agricultural development is positive. In other words the high growth states also show higher amount of subsidies. Similarly, in the case of Maharashtra we found larger subsidies accruing to irrigation and power as compared to credit and fertilizers. With the present pattern of growth, the subsidies on irrigation, power and credit are likely to increase in the near future but the growth rate in fertilizer consumption is likely to reduce. This would be detrimental to the growth of agriculture in the state. Hence, the policies of state Government can include schemes which would enhance the fertilizer use in the districts where it is quite low currently.

4.4.4 The development of agriculture in the state of Maharashtra suggested two distinct phases of growth—**first** phase ending at 1971-72 and the second beginning at 1973-74. The growth impetus in the later phase came mainly through the productivity growth. Given the limited scope for development of irrigation and its region specific coverage, it is a welcome phenomena that the state has adopted Watershed Development programme as a key programme. This could be supported by revenue generated through increased cost ^{of} inputs especially electricity and irrigation. The funds generated out of this can be used in the development of watershed programme.

4.4.5 In the inter-district scenario we find that the low subsidized districts bunch together with lower agricultural

development. This should be interpreted not as positive relationship thereby meaning subsidies induced growth in these regions, but in fact it is the developed regions that consumed larger subsidies. Hence, there should be a built-in-corrector to properly guide the allocation on subsidies to the less endowed regions and among these the weaker sections. This has been stated over and again in the policy statements without much of administrative steps.

4.4.6 In the micro level analysis we have noted quite an encouraging picture. The land utilization, in broad sense, did not change except the increase in cropping intensity. The beneficiary farmers use their land more intensively as compared to non-beneficiaries. The cropping pattern has undergone change after the receipt of subsidies. The change was in favour of cash crops. In fact three of the four subsidies chosen for study did induce larger area under oilseeds, pulses, and grapes. An important signal out of this result is that the designing of subsidies can help in monitoring a proper crop pattern but this should be supported by appropriate price policy at state level.

4.4.7 The input use structure of the beneficiaries has undergone a change and the cash component in the total cost is increasing. Larger use of modern inputs was evident in the group of beneficiaries. It was noted that the use of fertilizers and pesticides is quite common among ^{the} beneficiaries. The grape growers of Nashik who received subsidy for sprinkler and drip irrigation, spend large amount on seeds and pesticides.

Another interesting feature of input structure is the lower use of family labour and bullock labour. All these indicate larger cash requirement in the agricultural sector which means higher credit facilities would be required.

4.4.8 Subsidies have been effectively used to propogate the adoption of new technology. It was noted that the beneficiaries have shown a clear preference to new inputs and new practices of cultivation. Their perception also brings out very clearly that the subsidy policy induces the adoption of new technology. It is this positive aspect of subsidies which has been not utilized effectively. In Maharashtra the choice of the schemes is such that it is promoting new technology. Similar schemes can be designed for rainfed agricultural practices under watershed development programme.

4.4.9 The impact of subsidies on production, income and asset formation is quite encouraging. We have noted that subsidies generate almost double the output/input ratio. The savings generated are usually invested in non-farm assets or purchase of livestock. It is therefore necessary that there should be very gradual reduction in subsidies over time and in selected regions. The withdrawal of subsidies suddenly would amount to reduction in input use but a steady reduction may cause retention of the level of input use by transferring the savings towards working capital.

4.4.10 Farmers' perception about the impact of subsidies was quite important. The subsidies formed an important aspect of farmers' input structure. It came out from the responses that subsidies promote higher resource intensity, reduce the cost

of cultivation in the new input structure relative to the situation without subsidies, help in increasing farm income and allow an easier access to technology. Majority of the farmers suggested that the present schemes need to be modified to suit use of new inputs and must be accompanied with extension demonstration. Various difficulties were encountered by the farmers in obtaining the subsidies. Prominent among these were (1) delay in obtaining the inputs (2) required varieties are not available at proper time (3) quantity of inputs is insufficient and (4) the quality of inputs is sometimes extremely poor. All these are administrative problems and mostly locale in nature. However, it is necessary to look into the administrative set up to avoid such difficulties.

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E R R A T A

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36	5	2.3.2 <u>Land Use</u> ...	II.3.2 <u>Land Use</u> ...
38	5	area irrigated	irrigated area
44	17	Step up in growth	stepped up growth
45	6	the productivity growth	the productivity
46	14	(Fig.2.2(A),2.2(B),2.2(C))	(Fig. 2.2,2.3,and 2.4)
58	6	Figures 2.11 and 2.12	Figure 2.4
59	25	including Maharashtra, irrigation constitutes largest share for the state	including Maharashtra
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71	3rd para	Major schemes under direct subsidies are	Major schemes under direct subsidies.
86	2nd para	3.4 Input use structure	4.4 Input use structure
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Maharashtra

Summary Report

National Family Health Survey

1992-93



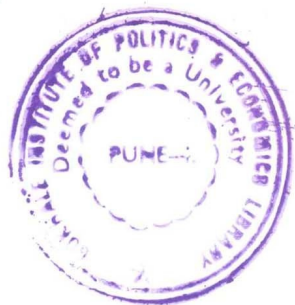
Population Research Centre
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International Institute for Population Sciences
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National Family Health Survey

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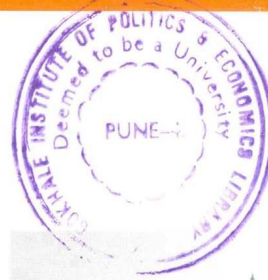
Maharashtra 1992-93 Summary Report



Population Research Centre, Gokhale Institute of Politics and Economics, Pune

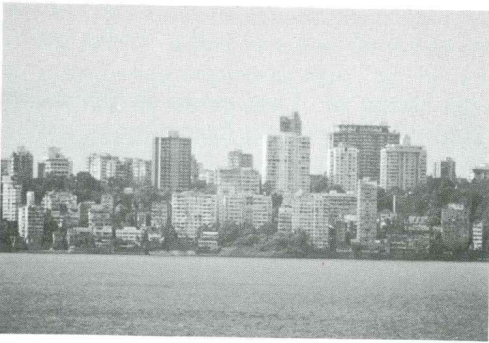
International Institute for Population Sciences, Bombay

August, 1994



CONTENTS

Background	3
Fertility and Marriage	4
Fertility Levels, Trends and Differentials	4
Marriage	6
Fertility Preferences	8
Family Planning	10
Knowledge of Family Planning Methods	10
Contraceptive Use	11
Attitudes Toward Family Planning	13
Exposure to Family Planning Messages	14
Need for Family Planning Services	14
Maternal and Child Health	15
Infant and Child Mortality	15
Antenatal Care and Assistance at Delivery	16
Breastfeeding and Supplementation	17
Vaccination of Children	18
Child Morbidity and Treatment Patterns	20
Nutritional Status of Children	21
Knowledge of AIDS	22
Conclusions	23
Fertility and Family Planning	23
Maternal and Child Health	24
Status of Women	25
Fact Sheet	26

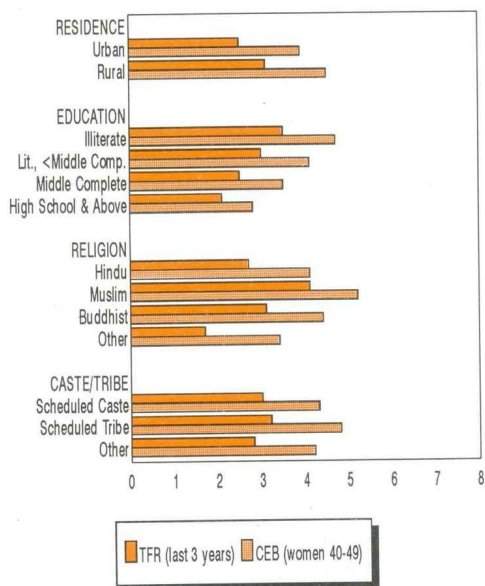


BACKGROUND

The National Family Health Survey (NFHS) is a nationally representative survey of ever-married women age 13-49. The NFHS covered the population of 24 states and the National Capital Territory of Delhi (the erstwhile Union Territory of Delhi) to provide demographic and health data for inter-state comparisons. The primary objective of the NFHS was to provide national-level and state-level data on fertility, nuptiality, family size preferences, knowledge and practice of family planning, the potential demand for contraception, the level of unwanted fertility, utilization of antenatal services, breastfeeding and food supplementation practices, child nutrition and health, vaccinations, and infant and child mortality.

In Maharashtra, interviewers collected information from 4,106 ever-married women age 13-49 in urban and rural areas. The fieldwork in Maharashtra was conducted between 23 November 1992 and 18 March 1993. The survey was carried out as a collaborative project of the Ministry of Health and Family Welfare, Government of India, New Delhi; the International Institute for Population Sciences, Bombay; the Population Research Centre at the Gokhale Institute of Politics and Economics, Pune; the Centre for Management Development Programmes, Hyderabad; the United States Agency for International Development (USAID), New Delhi; and the East-West Center/Macro International, United States of America. Funding for the survey was provided by USAID.

Figure 1
Total Fertility Rate (TFR) and Mean Number of Children Ever Born (CEB)



FERTILITY AND MARRIAGE

Fertility Levels, Trends and Differentials

- The NFHS total fertility rate (TFR) for women age 15-49 in Maharashtra for the period 1990-92 is 2.9 children, about 15 percent lower than the national average, as estimated from the same source. The TFR is about half a child lower in urban areas (2.5) than in rural areas (3.1).

Current fertility in Maharashtra is 15 percent lower than national fertility.

- The TFR of 3.0 estimated for 1991 from the Sample Registration System (SRS) maintained by the Office of the Registrar General, India, agrees very well with the TFR of 2.9 estimated from the NFHS. Crude birth rates from the two sources are virtually identical, at 26.7 and 26.2 births per 1,000 population from the NFHS and the 1991 SRS, respectively.
- The NFHS data on fertility provide clear evidence of declining fertility over time. Maharashtra's TFR fell from 3.8 in 1980 to 2.9 in 1990-92, a decline of 24 percent. The fall of fertility was larger in rural areas (26 percent) than in urban areas (14 percent) during this period. The TFR estimated by the SRS was 3.5 during 1985-87 and 3.0 in 1991.

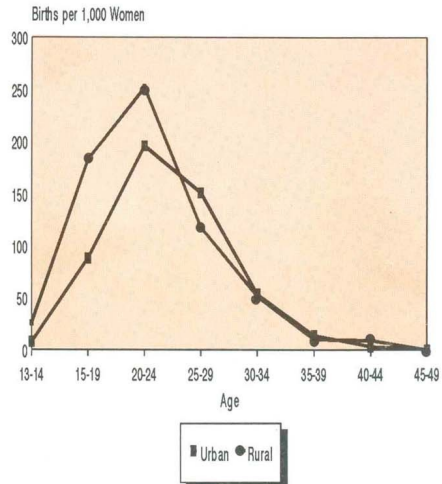
- Fertility is lower for more educated women and has fallen to replacement level for women with at least a high school education. The TFR is 3.5 for illiterate women and 2.1 for women with at least a high school education. Fertility differentials by religion and caste/tribe are also substantial in Maharashtra. The Muslim TFR of 4.1 is higher than the Hindu TFR of 2.7 by almost one and a half children. Scheduled castes and scheduled tribes have higher fertility than other groups.
- Childbearing in Maharashtra is concentrated in the age group 15-29, during which 88 percent of births occur. Early childbearing in Maharashtra is indicated by the fact that women age 15-19 contribute 25 percent to total fertility, in contrast to women age 30-44 who contribute only 12 percent to total fertility. Slightly more than two-thirds of currently married women age 13-19 have begun childbearing.

Childbearing is concentrated in the age group 15-29 years.

- The overall median interval between births is about 29 months. One in every 8 births occurs within 18 months of the previous birth. Thirty-one percent of births occur within 24 months of the previous birth.

The contribution of age group 35-49 to total fertility is only 3 percent and that of women age 15-19 is 25 percent.

Figure 2
Age-Specific Fertility Rates by Residence



Note: Rates are for the three years before the survey (1990-92)

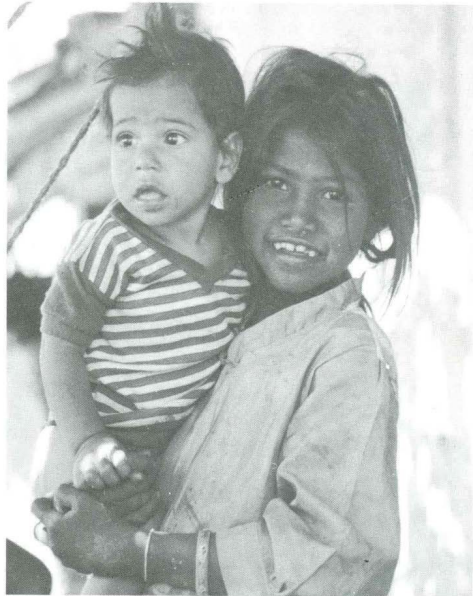
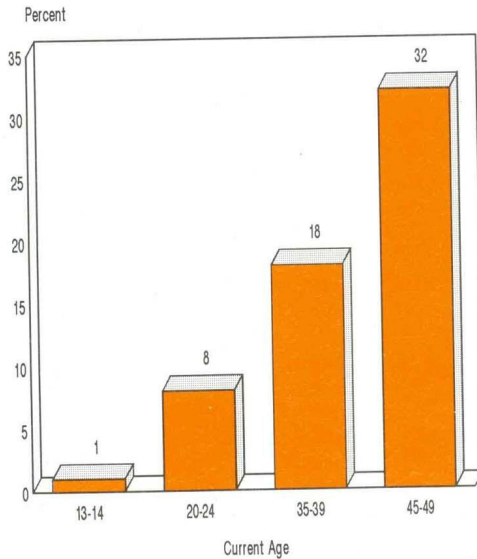


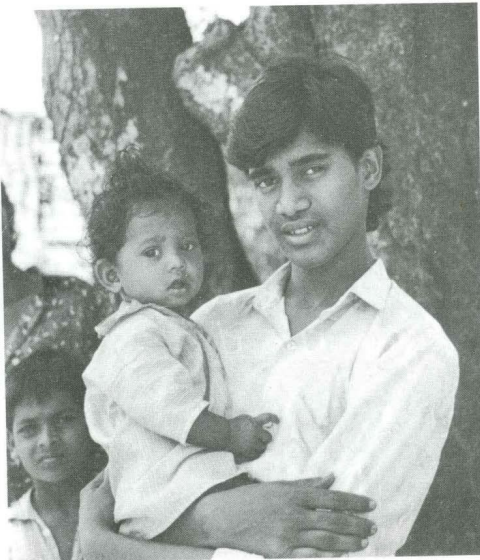
Figure 3
Percentage of Women Married by Age 13, by
Current Age



Marriage

- As in many other states in India, marriage is virtually universal in Maharashtra. At age 15-19, nearly 38 percent of women are married (21 percent in urban areas and 50 percent in rural areas). At age 25-29, 95 percent are married (90 percent in urban and 99 percent in rural areas).
- Marriage at very young ages has been declining over time. The proportion marrying by age 13 declined from 32 percent in the 45-49 age cohort to just over one percent in the 13-14 age cohort, and the proportion marrying by age 15 declined from 51 percent in the 45-49 age cohort to 16 percent in the 15-19 age cohort. Although the median age at marriage has been rising in both urban and rural areas, it is still low, especially in rural areas. The median age at marriage for the more recent cohort of women age 20-24 is 17.5 years. Urban women marry three years later than rural women (18.9 years in urban areas and 15.8 in rural areas).

The median age at marriage for girls in rural areas is still very low.

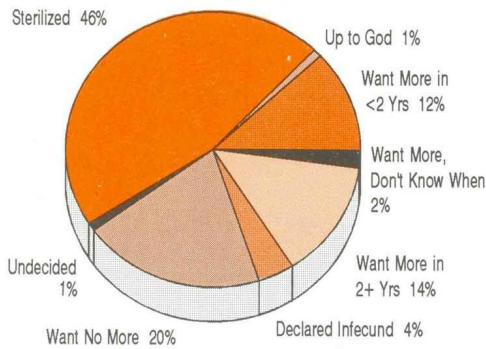


- Marriages occur at a considerably later age among more educated women. Women belonging to scheduled castes or tribes have a lower age at marriage than nonscheduled castes or tribes. It is noteworthy that more than 14 years after the amendment of the Child Marriage Restraint Act, which stipulated a minimum age at marriage of 18 for girls and 21 for boys, a large majority of girls in rural areas and a sizeable proportion of girls in urban areas still marry before age 18. Moreover, knowledge of the legal minimum age at marriage for girls and boys is not widespread. In Maharashtra, slightly less than half of ever-married women can identify the legal minimum age at marriage for girls, and slightly less than one-third can identify the legal minimum age at marriage for boys. The urban-rural difference in this regard is large; the proportion of ever-married women who know the legal age at marriage for girls is 68 percent in urban areas but only 36 percent in rural areas.



Slightly less than half of ever-married women can identify the legal minimum age at marriage for girls.

Figure 4
Fertility Preferences Among Currently Married Women Age 13-49



Fertility Preferences

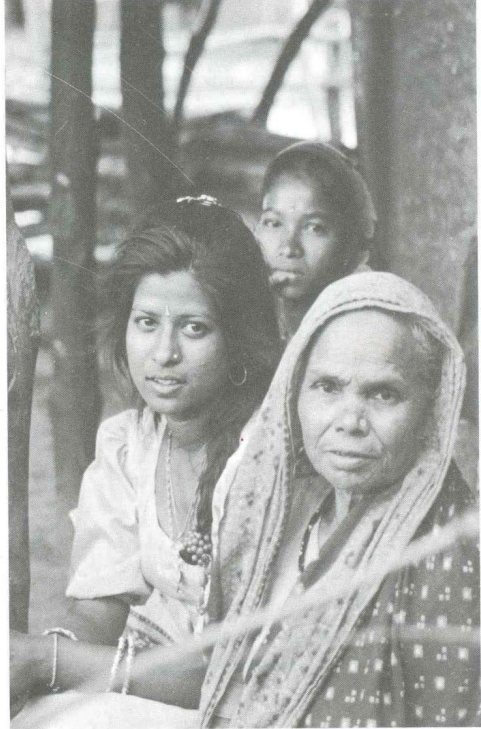
- Twenty percent of currently married women do not want any more children, and 46 percent of currently married women (or their husbands) are sterilized. Together, these two groups constitute two-thirds of all currently married women in Maharashtra. Overall, 80 percent of currently married women want to either space their children or stop having children altogether.

Two-thirds of currently married women do not want any more children.

- The desire for additional children declines rapidly as the number of living children increases. Seventy-two percent of women with no living children want to have children, and only one percent do not want any children. The proportion of women who want another child drops to 26 percent for women with two living children and 11 percent for women with three living children.
- The desire to space children is strong for women who have fewer than three children. The proportion of currently married women who would like to wait at least two years before having their next child is 9 percent for women with no children, 45 percent for women with one living

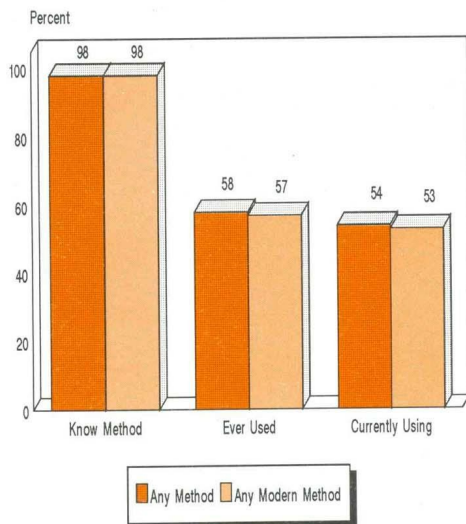
child, and 15 percent for women with two living children. The proportion of women who either do not want any more children or are sterilized (or the husband is sterilized) is 71 percent for women with two living children, 86 percent for women with three living children, and 90 percent for women with four or more living children.

- Among women who want another child there is a strong preference for sons, with 44 percent wanting the next child to be a son and only 11 percent wanting the next child to be a daughter. However, 45 percent of women indicate no preference, with 35 percent saying it does not matter and 10 percent saying it is up to God. The preference for sons is stronger in rural areas, where 49 percent want a son, than in urban areas, where 36 percent want a son.
- Responses on ideal family size in Maharashtra fall mostly within a narrow range of 2 to 3 children. The mean ideal family size is 2.5 children, and there is not much difference between urban areas (2.4) and rural areas (2.7). Women who have completed at least middle school have an ideal family size close to two children.



The ideal family size for married women is 2.5 children.

Figure 5
Knowledge and Use of Family Planning
(Currently Married Women Age 13-49)



FAMILY PLANNING

Knowledge of Family Planning Methods

- Awareness of family planning methods is widespread in Maharashtra. The proportion of ever-married women who report knowledge of at least one method of family planning is 99 percent in urban areas and 96 percent in rural areas. The percentage with knowledge of any method and the percentage with knowledge of any modern method are slightly higher among currently married women than among ever-married women.

Knowledge of at least one modern contraceptive method is universal.

- There is considerable variation in knowledge of particular methods of contraception. The most widely known method among ever-married women is female sterilization (97 percent), followed by male sterilization (83 percent). The three officially sponsored spacing methods are less familiar to respondents. The most well known among the spacing methods are the IUD (70 percent) and the pill (66 percent). Only 56 percent of women know of the condom. Awareness of modern methods exceeds awareness of traditional methods by a wide margin. Traditional methods are known to only 23 percent of ever-married women. Twenty-one percent know of the periodic abstinence/rhythm method, and 8 percent of women know about withdrawal. Knowledge about sources of contraception is widespread in Maharashtra, with 95 percent of ever-married women knowing where to obtain at least one method of family planning.

Contraceptive Use

- Fifty-eight percent of currently married women age 13-49 in Maharashtra have ever used a contraceptive method. Modern methods have been used by 57 percent and traditional methods by 4 percent.
- The overall level of current use of contraception in Maharashtra is 54 percent, with 53 percent using modern methods and 1 percent using traditional methods. Female sterilization (40 percent) and male sterilization (6 percent) are the most commonly used methods, and together they account for 86 percent of total contraceptive prevalence. Female sterilization accounts for 87 percent of total sterilizations. The IUD and the condom are each used by about 3 percent of women, and each of the other spacing methods is used by 1 percent of women or less.



Fifty-four percent of married women are currently using family planning.

- Contrary to expectation, the contraceptive prevalence rate for modern methods is higher in rural areas (54 percent) than in urban areas (51 percent). This is due to the higher rates of sterilization in rural areas (51 percent) than in urban areas (40 percent). The prevalence of spacing methods is more than three times higher in urban areas (11 percent) than in rural areas (3 percent).

The contraceptive prevalence rate is higher in rural areas.



Figure 6
Current Use of Modern Contraceptive Methods,
by Education

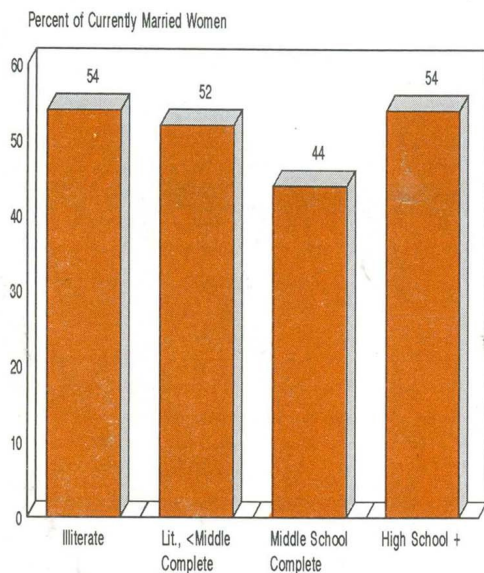
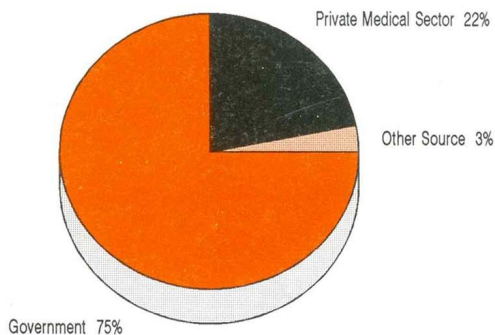


Figure 7
Sources of Family Planning Among Current
Users of Modern Contraceptive Methods



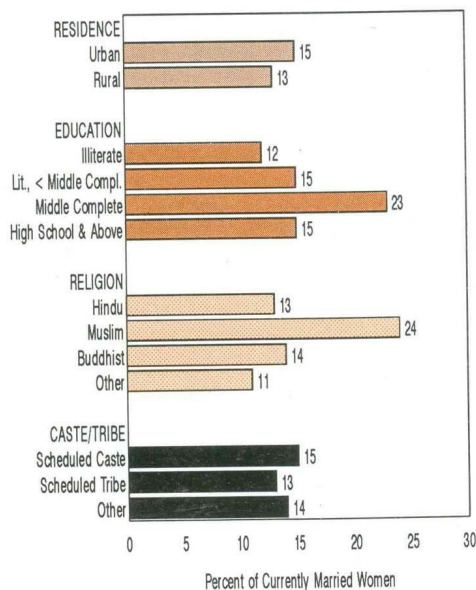
- The relationship between current use and educational attainment of women is weak. However, the type of method used varies with education. The use of sterilization decreases and the use of spacing methods (both modern and traditional) increases as education increases. The Hindu-Muslim difference in current use of contraception is substantial, with prevalence at 57 percent among Hindus and 36 percent among Muslims. Although there is not much difference in contraceptive prevalence among scheduled castes, scheduled tribes and others, the proportion of contraceptive use accounted for by sterilization is especially high among scheduled caste and scheduled tribe women (95 percent).
- The contraceptive prevalence rates by sex composition of living children at each parity indicate the existence of son preference. Current use of family planning is lowest for women with no sons and highest for women with all sons.
- The public sector (including government/municipal hospitals, Primary Health Centres and other governmental health infrastructure) supplies three-fourths of all modern methods used, and the private medical sector (including private hospitals or clinics, private doctors and pharmacies/drug stores) supplies 23 percent. The public sector supplies a larger percentage of modern methods in rural areas (88 percent) than in urban areas (55 percent).

Attitudes Toward Family Planning

- Attitudes toward the use of family planning are generally positive, with 76 percent of currently married, nonsterilized women approving the use of family planning (83 percent in urban areas and 70 percent in rural areas). Fifty-eight percent of currently married women reported that both they and their husbands approve of family planning, and 15 percent said that they both disapprove.
- Education of women as well as their husbands plays an important role in determining attitudes toward family planning. The proportion who approve of family planning is 65 percent for illiterate women and 93 percent for women who have completed high school. Joint approval by both husband and wife is lowest among illiterate women (43 percent).
- There is little difference in the approval of family planning by religion or caste/tribe, although approval is somewhat lower among scheduled tribe women (67 percent).
- More than 95 percent of women who have ever used family planning report that they approve of family planning. Seventy percent of women who have never used family planning also approve of it. Among never users who approve of family planning, 14 percent say their husbands do not approve of family planning.



Figure 8
Unmet Need for Family Planning, by Selected Characteristics



- Overall, 65 percent of currently married non-users do not intend to use any method of family planning in the future. Among those who intend to use some family planning method in the future, more than two-thirds (68 percent) want to use female sterilization, 14 percent want to use the pill, 7 percent want to use the IUD and 5 percent want to use the condom. The finding that 26 percent of intended future users want to use spacing methods, while only 12 percent are currently using such methods, indicates the potential demand for spacing methods.

Exposure to Family Planning Messages

- The effort to disseminate family planning information through the electronic mass media has succeeded in reaching slightly more than half of ever-married women in Maharashtra.

Need for Family Planning Services

- Overall, 14 percent of women in Maharashtra have an unmet need for family planning services. There is little difference between the unmet need for spacing and the unmet need for limiting (about 7 percent each). If all the women who say they want to space or limit the children were to use family planning, the contraceptive prevalence rate would increase from the present 54 percent to 68 percent of currently married women. These figures indicate that 79 percent of the demand for family planning is being met by the current family planning programme in Maharashtra.

MATERNAL AND CHILD HEALTH

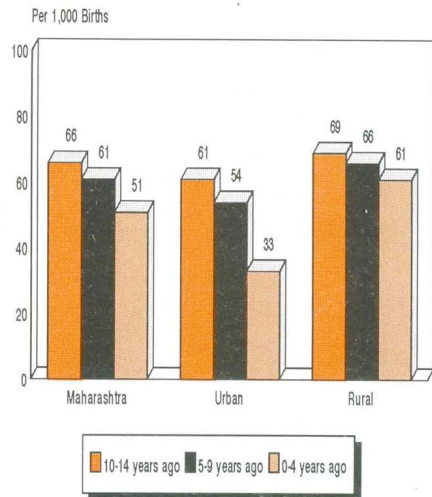
Infant and Child Mortality

- The infant mortality rate in Maharashtra declined during the past 15 years, from 66 per 1,000 live births during 1978-82 (10-14 years prior to the survey) to 51 per 1,000 live births during 1988-92 (0-4 years prior to the survey), a decline of 23 percent in 10 years. Among births occurring during the five years immediately preceding the survey, 1 in 20 children died within the first year of life, and 1 in 14 children died before reaching age 5. Therefore, child survival programmes in Maharashtra need to be intensified to further reduce infant and child mortality levels.

One in every 20 children dies within the first year of life.

- During 1988-92, the infant mortality rate was 85 percent higher in rural areas (61 per 1,000) than in urban areas (33 per 1,000). Children in rural areas of Maharashtra experienced a 55 percent higher risk of dying before their fifth birthday than urban children.
- The infant mortality rate for the 10-year period preceding the survey declines sharply with increasing education of women. The infant mortality rate among babies born to women who have at least a high school education (24 per 1,000) is one-third of that for babies born to illiterate women (72 per 1,000).

Figure 9
Infant Mortality Rates for Five-Year Periods by Residence



Note: Rates are for 5-year periods preceding the survey

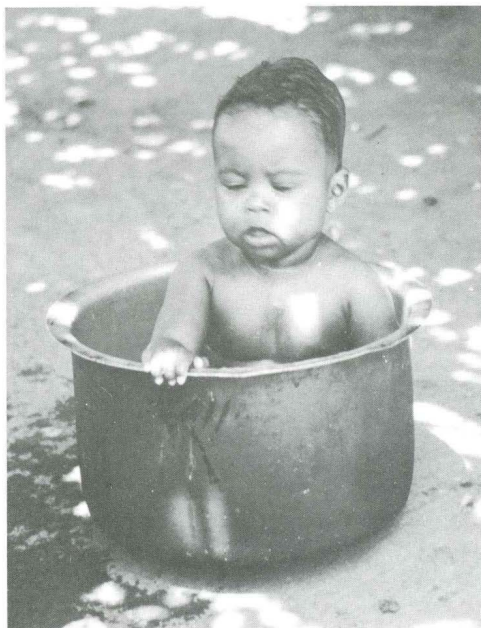


Figure 10
Infant Mortality Rates by Selected Demographic Characteristics

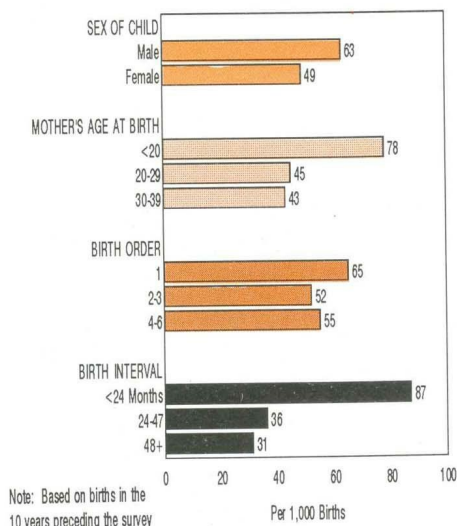
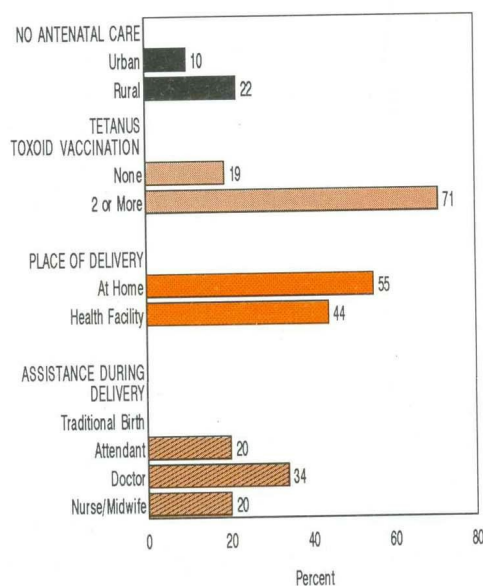


Figure 11
Antenatal Care, Place of Delivery, and Assistance During Delivery



- Girls in Maharashtra have higher mortality risks than boys, except during the neonatal period. The neonatal mortality rate, which reflects a substantial component of congenital conditions, as expected, is higher for boys (46 per 1,000 live births) than for girls (29 per 1,000 live births). However, the female disadvantage becomes evident in postneonatal and child mortality where the ratio of female to male mortality is 1.21 and 1.24, respectively.
- The infant mortality rate is highest for births to mothers under age 20 (78 per 1,000 live births). The infant mortality rate is slightly less than three times as high for children with a preceding birth interval of less than 24 months as for children with a preceding interval of 48 months or more (87 compared with 31 per 1,000 live births).

Antenatal Care and Assistance at Delivery

- Utilization of antenatal care is quite high in Maharashtra. During the four years preceding the survey, mothers received antenatal care for 83 percent of births, with 74 percent of them receiving antenatal care from a doctor. Similarly, women received two or more doses of tetanus toxoid injections for 71 percent of births, and the same percentage received iron and folic acid tablets.
- The urban-rural difference in utilization of antenatal care services is substantial. The proportion of births whose mothers received antenatal care is 90 percent in urban areas and 78 percent in rural areas. Antenatal care ranges from 73 percent among illiterate women to 98 percent among women with at least a high school education.

- Fifty-five percent of births are delivered at home, 23 percent in public health facilities and 21 percent in private health facilities. Thirty-four percent of the deliveries are assisted by a doctor and another 20 percent by a nurse/midwife. One in five deliveries is attended by a traditional birth attendant, and 26 percent of deliveries are attended by relatives or other persons.

Fifty-five percent of babies are delivered at home.

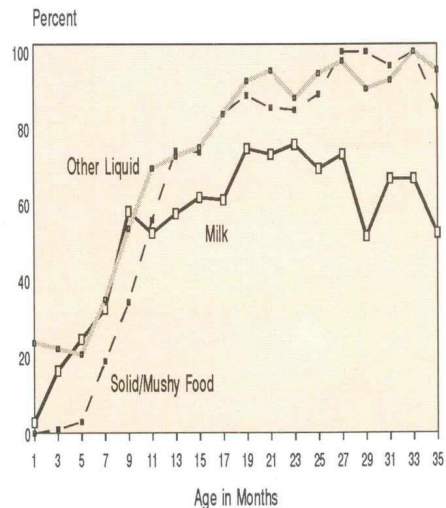
- There are substantial differences in place of delivery by residence and education of the mother. Whereas 73 percent of deliveries in urban areas take place in public or private health facilities, only one quarter of the births in rural areas are delivered in a health facility. Only 1 out of 4 births to illiterate mothers is delivered in a health facility, compared with almost 9 out of 10 births to mothers with at least a high school education.

Breastfeeding and Supplementation

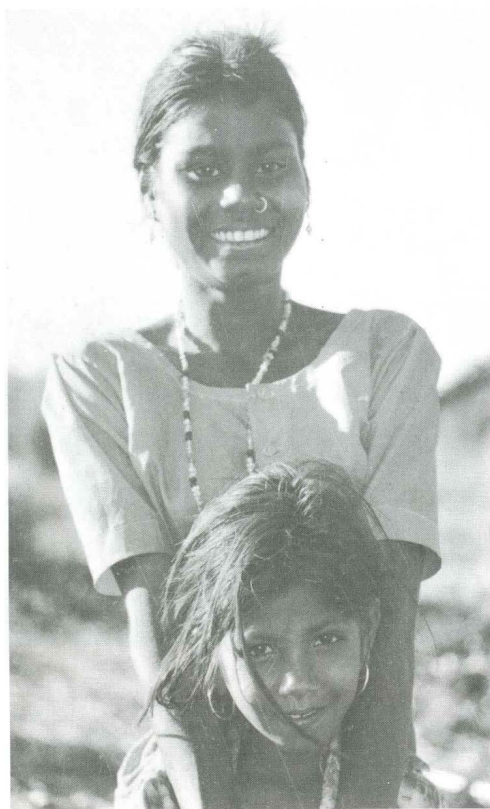
- Breastfeeding is nearly universal in Maharashtra, with 97 percent of all children having been breastfed. The practice of breastfeeding is high in all subgroups, ranging from 93 to 100 percent.
- Seven percent of children begin breastfeeding within one hour of birth, and 18 percent begin within one day of birth. A substantial majority of women who breastfeed squeeze the first milk from the breast before they initiate breastfeeding, thereby depriving the infant of colostrum, which provides natural immunity against diseases and important nutrients to the baby.



Figure 12
Percentage of Children Given Milk, Other Liquid, or Solid/Mushy Food the Day Before the Interview



Note: Based on youngest child under age three being breastfed;
Milk refers to fresh milk and tinned/powdered milk



- Although exclusive breastfeeding is recommended for all children through age 4-6 months, water and other supplements are given to slightly more than half of children below one month of age. Thirty-one percent of children age 2-3 months are exclusively breastfed, and slightly more than one-fourth of children age 4-5 months are exclusively breastfed.
- Supplements other than plain water are given in addition to breast milk to 25 percent of children age 0-1 month, 31 percent of children age 2-3 months and more than three-quarters of children age 8-9 months.
- The use of a bottle with a nipple is rare in Maharashtra. The proportion using a bottle increases from just over 1 percent in the first month of life to a high of 17 percent for children age 10-11 months, after which it declines slowly to less than 1 percent for children above 27 months of age.

Vaccination of Children

- Among children 12-23 months, 87 percent have been vaccinated against tuberculosis (BCG vaccine), 83 and 82 percent have received all three doses of DPT and polio, respectively, and 70 percent of children have been vaccinated against measles. Sixty-four percent of all children have been fully vaccinated against six serious but preventable diseases, and about 8 percent have received no vaccinations at all. Contrary to expectation, a higher percentage of children in rural areas than in urban areas have received each type of vaccination, with 66 percent of children in rural areas and 62 percent in urban areas having received all vaccines. Vaccination cards were seen for 41 percent of children in rural areas and 36 percent in urban areas.

Sixty-four percent of children age 12-23 months are fully vaccinated.

- There is a substantial Hindu-Muslim difference in vaccination rates, with 67 percent of Hindu children and 46 percent of Muslim children having received all vaccines. Except for measles, the vaccine coverage does not differ greatly by sex of child. The sex differences that do exist are generally favourable to female children. There are marked differences in vaccine coverage by education of mother. Fifty-six percent of children of illiterate mothers are fully vaccinated compared to 81 percent of children of mothers with at least a high school education.

Figure 13
Vaccination Coverage Among Children Age 12-23 Months

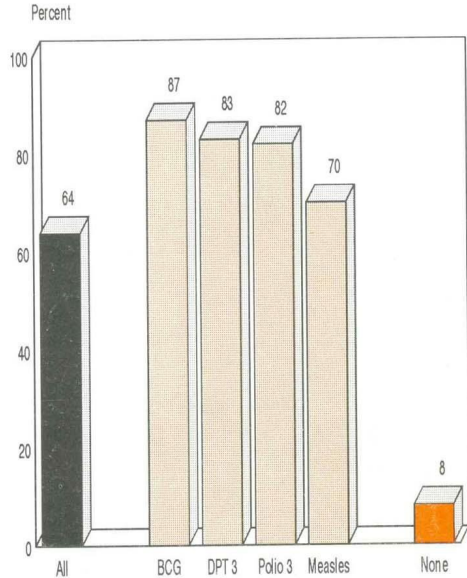
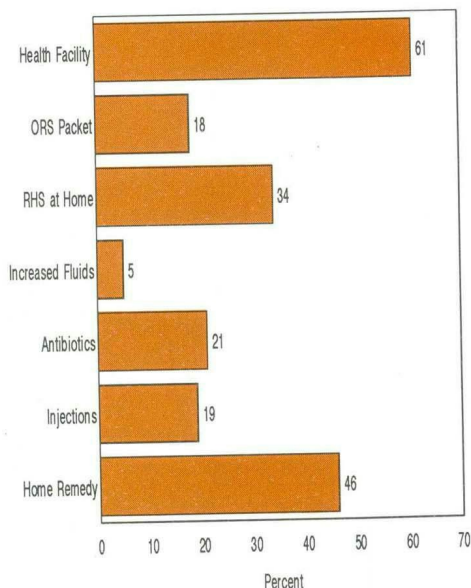


Figure 14
Treatment of Diarrhoea in the Two Weeks
Preceding the Survey
(Children Under 4)

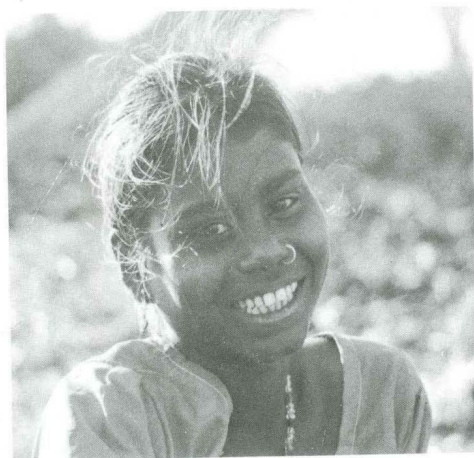


Child Morbidity and Treatment Patterns

- During the two weeks preceding the survey, 6 percent of children under four years of age had symptoms of acute lower respiratory infection (cough accompanied by fast breathing). Seventy-three percent of these children were taken to a health facility or provider, and 82 percent of these children received some form of treatment.
- Over the same period, 22 percent of children suffered from fever, which may be a sign of malaria or other illness. Seventy-five percent of them were taken to a health facility or provider for treatment.
- One in 10 children had diarrhoea during the two weeks before the survey. Sixty-one percent of them were taken to a health facility or provider; 18 percent were treated with a solution prepared from oral rehydration salt (ORS) packets, 34 percent were treated with recommended home solutions (RHS), 5 percent received increased fluids, and 55 percent were not given any type of oral rehydration treatment.

Knowledge of ORS is not widespread.

- Knowledge and use of ORS are not widespread. Fifty-three percent of mothers are not familiar with ORS packets, and 69 percent have never used them.



Nutritional Status of Children

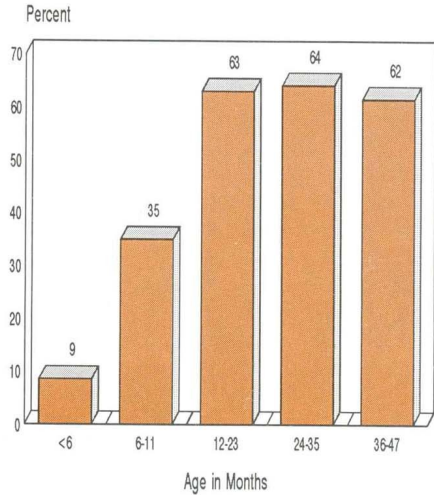
- Both chronic and acute undernutrition in Maharashtra are common. More than half of all children are underweight, and about half are stunted. The proportion of children who are severely undernourished is also very high: 20 percent as measured by weight-for-age and 22 percent as measured by height-for-age. One in five children in Maharashtra is affected by the most serious nutritional condition for which data were collected, namely wasting.

Both chronic and acute undernutrition are common.

- There is not much difference in the nutritional status of children by sex. However, slightly higher percentages of girls in Maharashtra are underweight and stunted than boys.
- Both chronic and acute undernutrition are more common in rural areas than in urban areas. Hindu and Muslim children have approximately the same levels of undernutrition. Scheduled caste and scheduled tribe children are more undernourished than other children.
- Differentials in nutritional status by education of mother are more striking. Among children of illiterate mothers, 23 percent are wasted and 55 percent are stunted. Among children whose mothers have at least a high school education, 10 percent are wasted and 28 percent are stunted.

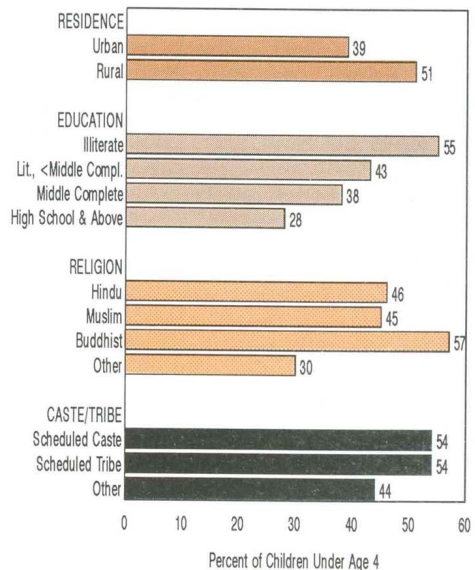


Figure 15
Percentage of Children Under Age Four Who Are Underweight, by Age



Note: Percentage of children more than 2 standard deviations below the median of the International Reference Population

Figure 16
Chronic Undernutrition (Stunting) by Selected Characteristics



KNOWLEDGE OF AIDS

- In order to assess basic knowledge about Acquired Immune Deficiency Syndrome (AIDS), the Maharashtra NFHS incorporated a series of questions on AIDS. All ever-married women age 13-49 years were asked about awareness of AIDS, source of information about AIDS, and knowledge about means of transmission and prevention of the disease. Awareness of AIDS is very limited in Maharashtra. Only 19 percent of ever-married women have heard of AIDS. Generally, women who have heard of AIDS have correct knowledge about its transmission. The most important single source of information about AIDS is television.

Only 19 percent of ever-married women have heard of AIDS.



CONCLUSIONS

Fertility and Family Planning

- Although there is clear evidence of a rapid decline in fertility in Maharashtra during the last decade, the state has not yet achieved replacement-level fertility. The TFR is 2.9 children per woman, the crude birth rate is 27 per 1,000 population and the contraceptive prevalence rate is 54 percent. The ideal number of children is 2.5. The government of Maharashtra vigorously advocates a two-child family norm.
 - Perhaps the most striking feature of the pattern of current age-specific fertility rates is the substantial contribution of women age 15-19 to the total fertility rate (25 percent). The contribution of women age 35 years and above to the total fertility is negligible (only 3 percent), and that of women age 30 and over is also quite small (12 percent). In rural areas, the contribution of young women age 15-19 to total fertility (29 percent) is even higher than in the state as a whole. The prime childbearing years in Maharashtra extend from age 15 to 29. To promote safe motherhood and child survival, childbearing should ideally be concentrated in the age group 20-29 years.
 - In order to achieve replacement-level fertility in Maharashtra, it is essential to reduce the contribution of teenage women to total fertility. This contribution is large partly because many women marry below the legally stipulated minimum age of 18 years. The proportion ever-married at age 15-19 is 50 percent in rural areas, 21 percent in urban areas, and 38 percent in the state as a whole. Although low, the median age at marriage has increased over time. Nevertheless, in rural areas the median age at marriage for the cohort of women age 20-24 years at the time of the survey is still only 15.8 years, 2.2 years short of the legally stipulated minimum age at marriage of 18 years. The comparable figure for urban areas is 18.9 years. There is a need to educate and motivate the public to delay marriage
- and avoid the risk associated with early child-bearing. It is noteworthy that less than one-third of ever-married women know the legal minimum age at marriage for men and slightly less than half know the legal minimum age at marriage for women. The information, education and communication (IEC) component of the state's family welfare programme should do more to promote later marriage.
- Another way to reduce fertility among married teenage women is to promote the use of spacing methods. The current contraceptive use rate in Maharashtra among currently married women age 15-19 is 9 percent, and slightly less than half of current users (or their husband) are sterilized. An added benefit of lower fertility among women under age 20 would be lower infant mortality, because infant mortality rates are relatively high for children of mothers below age 20.
 - The family planning programme in Maharashtra has achieved considerable success, with a contraceptive prevalence rate of 54 percent. Some noteworthy features of family planning in Maharashtra are a comparatively high contraceptive use rate (especially sterilization) in rural areas, where the overall use rate is 55 percent; a median age at sterilization of 25.6 years; use of modern methods of contraception by a very small proportion of married women age 15-19, a substantial proportion of women age 20-24, and a large majority of women age 30-49; and low rates of use of spacing methods. Sixty-eight percent of noncontracepting women say their preferred future method of family planning is sterilization, indicating that a large majority of women in Maharashtra equate sterilization, and especially female sterilization, with family planning. Limited availability and promotion of spacing methods in the family welfare programme are partly responsible for the low contraceptive use rate and the high fertility rate at age 15-19, and this has meant that the pro-

gramme's achievements are less than they could be. The NFHS findings indicate a substantial demand for spacing methods, and this demand would probably increase if spacing methods were more widely promoted and available.

Maternal and Child Health

- Various indicators of maternal and child health show that Maharashtra has achieved considerable progress in the area of maternal and child health. Continued improvement of services is essential for achieving the goals of the Child Survival and Safe Motherhood (CSSM) programme. Although the infant mortality rate in Maharashtra has declined rapidly, it is still rather high in rural areas, at 61 deaths per 1,000 live births. The urban rate is much lower, at 33 deaths per 1,000 live births. The infant mortality rate is also high among scheduled castes. The majority of births in Maharashtra are delivered at home. Whereas almost three-fourths of babies are delivered in a health facility in urban areas, only one-quarter of babies are delivered in a health facility in rural areas. Seventy-one percent of births were to mothers who received two or more doses of tetanus toxoid vaccine, and 71 percent were to mothers who also received iron and folic acid tablets as a prophylaxis against nutritional anaemia during pregnancy. This achievement, though substantial, falls short of the official target of 100 percent coverage by 1990.
- Although Maharashtra did not meet the objective of the Universal Immunization Programme to cover 85 percent of all infants by 1990, vaccination coverage of children age 12-23 months against the six serious but preventable diseases is reasonably good at 64 percent. The coverage of BCG is very good (87 percent) and that of DPT and polio is also quite good (83 and 82 percent, respectively). The coverage of measles

is comparatively low at 70 percent. Special efforts are needed to improve the relatively low coverage of Muslim children under the Universal Immunization Programme.

- Despite the publicity given to the use of oral rehydration salts (ORS) and recommended home solutions (RHS) of sugar, salt and water (designated as life-saving fluid in the Marathi language), knowledge of ORS and the use of ORS and RHS are very limited. The IEC component of this aspect of the child survival programme needs to be strengthened.
- Although almost half of the women in Maharashtra are exposed to the mass media, there is a need to introduce alternative communication strategies, such as the distribution of video cassettes with culturally appropriate programmes that can be shown on community televisions. The need for increased media coverage should extend to AIDS as well as family planning. The NFHS findings indicate that knowledge of AIDS is very limited in Maharashtra, with large urban-rural differences in the percentage of women who know about AIDS (35 percent in urban areas and 7 percent in rural areas). There is an urgent need to increase the level of knowledge of AIDS, its mode of transmission, and means of preventing its spread.

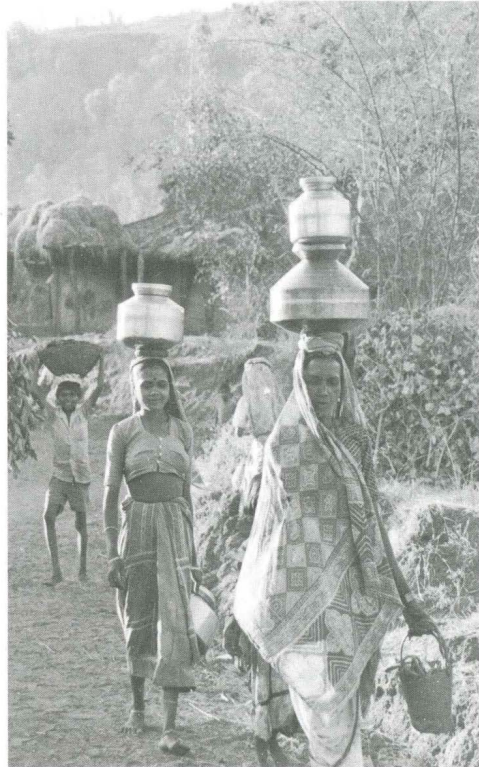
Status of Women

- Although there has been progress in the education of women in Maharashtra, 50 percent of ever-married women age 13-49 are still illiterate (32 percent in urban areas and 63 percent in rural areas). The NFHS findings show that education has played a major role in shaping the attitudes and behaviour of women. Educational attainment is strongly associated with several important variables, including access to mass media, age at marriage, knowledge about the legal minimum age at marriage, fertility behaviour, use of spacing methods, interspousal communication regarding family planning, ideal number

of children, wanted fertility rate, infant and child mortality, utilization of antenatal care services, delivery in a health facility, delivery by trained medical attendants, vaccination of children, knowledge and ever use of ORS and RHS, and nutritional status of children. Improvement in women's literacy and education is clearly desirable, not only in its own right but also because of its favourable demographic and health impacts.

Half of ever-married women in their childbearing years are illiterate.

- The comparatively low status of women in Maharashtra is evident from lower female than male literacy, lower school attendance rates for girls age 6-14, a sex ratio that is unfavourable to women, a lower level of female employment, son preference, higher post-neonatal and child mortality rates for girls, and a low mean age at marriage for women, especially in rural areas. On the other hand, there is virtually no difference in vaccination rates for boys and girls, and gender differences in nutritional status of children, although slightly advantageous to boys, are very small. Programmes to elevate the status of women are clearly needed. In particular, improving the education of girls and young women is important for reducing fertility, increasing age at marriage and strengthening maternal and child health. Urban-rural differences in several of the factors listed above are glaringly large and indicate a particular need for programmes to elevate the status of women in rural areas.



FACT SHEET-MAHARASHTRA

1991 Population Data

Office of the Registrar General and Census Commissioner

Total population (millions)	78.9
Percent urban	38.7
Percent scheduled caste	11.1
Percent scheduled tribe	9.3
Decadal population growth rate (1981-91)	25.7
Crude birth rate (per 1,000 population)	26.2
Crude death rate (per 1,000 population)	8.2
Life expectancy at birth (years) ¹	
Male	61.9
Female	62.9

National Family Health Survey, 1992-93

Sample Population

Ever-married women age 13-49	4,106
------------------------------	-------

Background Characteristics of Women Interviewed

Percent urban	41.4
Percent illiterate	50.2
Percent completed secondary school or higher	14.8
Percent Hindu	76.4
Percent Muslim	12.6
Percent working	49.0

Marriage and Other Fertility Determinants

Percent of women age 13-49 currently married	70.6
Percent of women age 13-49 ever married	76.0
Singulate mean age at marriage for females (in years)	19.3
Singulate mean age at marriage for males (in years)	24.9
Percent of women married to first cousin ²	20.5
Median age at marriage among women age 25-49	16.1
Percent of ever-married women with knowledge about the legal minimum age at marriage	
For males	31.4
For females	49.1
Median months of breastfeeding ³	23.0
Median months of postpartum amenorrhoea ³	8.5
Median months of postpartum abstinence ³	4.5

Fertility

Total fertility rate ⁴	2.86
Mean number of children ever born to women age 40-49	4.25

Desire for Children

Percent of currently married women who:	
Want no more children	20.5
Want to delay their next birth at least 2 years	13.5
Mean ideal number of children ⁵	2.5
Percent of births in the last 5 years which were:	
Unwanted	7.1
Mistimed	15.0

Knowledge and Use of Family Planning

Percent of currently married women:	
Knowing any method	97.8
Knowing a modern method	97.8
Knowing a source for a modern method	95.6
Ever using any method	58.1
Currently using any method	54.1

Percent of currently married women currently using:

Pill	1.4
IUD	2.5
Injection	--
Condom	2.5
Female sterilization	40.3
Male sterilization	6.2
Periodic abstinence	1.1
Withdrawal	0.1
Other method	0.1

Mortality and Health

Infant mortality rate ⁶	50.5
Under-five mortality rate ⁶	70.3

Percent of births⁷ whose mothers:

Received antenatal care from a doctor or other health professional	69.3
Received 2 or more tetanus toxoid injections	71.0

Percent of births⁷ whose mothers were assisted at delivery by:

Doctor	33.6
Nurse/midwife	19.5
Traditional birth attendant	20.4

Percent of children 0-1 month who are breastfeeding

Percent of children 12-13 months who are breastfeeding 89.2

Percent of children 12-23 months who received:⁸

BCG	86.9
DPT (three doses)	83.1
Polio (three doses)	81.6
Measles	70.2
All vaccinations	64.1

Percent of children under 4 years⁹ who:

Had diarrhoea in the 2 weeks preceding the survey	9.7
Had a cough accompanied by rapid breathing in the 2 weeks preceding the survey	5.9
Had a fever in the 2 weeks preceding the survey	21.7
Are chronically undernourished (stunted) ¹⁰	46.0
Are acutely undernourished (wasted) ¹⁰	20.2

Knowledge of AIDS

Percent of ever-married women age 13-49 who have heard about AIDS	18.6
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1 1986-91

2 Based on ever-married women

3 Current status estimate based on births during the 36 months preceding the survey (48 months for breastfeeding)

4 Based on births to women age 15-49 during the 3 years preceding the survey

5 Based on ever-married women age 13-49, excluding women giving non-numeric responses

6 For the 5 years preceding the survey (1988-92)

7 For births in the period 1-47 months preceding the survey

8 Based on information from vaccination cards and mothers' reports

9 Children born 1-47 months preceding the survey

10 Stunting assessed by height-for-age, wasting assessed by weight-for-height; undernourished children are those more than 2 standard deviations below the median of the international reference population, recommended by the World Health Organization

