

# **DROUGHT IN MAHARASHTRA 1972**

**A Case for  
Irrigation Planning**

**Sulabha Brahme**

**Gokhale Institute of Politics & Economics  
Pune 411 004**

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## FOREWORD

This study is based upon an enquiry into the severe drought conditions prevailing in large parts of the State of Maharashtra in 1972-73. The Institute had also in the past studied the impact of drought, and this was in a way a repetition of similar enquiries. While the unpublished report had been made available to concerned official agencies, it is being published, rather late, in a summarised form to make it available to interested students and policy makers.

The core of the report, based on field investigations in a large number of affected villages spread over all the affected districts of Western Maharashtra and Marathwada Divisions, is in Chapter IV. Drought affects adversely both cultivators and landless agricultural labour households. The policy of scarcity or famine relief work was designed to prevent starvation of these people. The study shows that the real income level of rural household severely declined, and households with less than 12 Kg. of cereals per capita per month increased from about one-third to almost two-thirds of the total number of rural households. It is also significant to note that the decline in the level of living was more in case of the medium and small farmers than in case of the landless labourers; the cultivators lost their crops and had to depend entirely on wage labour, while the labourers had wage labour on public works in place of wage work on farm. The farmers, in addition, suffered loss of assets in the form of livestock, utensils and even land. There was also considerable variation from area to area depending upon the severity of drought on the one hand and the opening of drought relief works on the other. The study shows that inability of the State Government to open such works in sufficient numbers or for sufficient periods resulted in a great decline in the level of living of the people. This drought coincided with the first year of the State Governments' Employment Guarantee Scheme (EGS). This scheme, since then, has faced the problem of absence of sufficient number of blueprints for labour-intensive public works, which the administration is trying to get over. It is not surprising, therefore, that for occasional scarcity or famine no such projects were ready at hand. The study again draws attention to the need for such public schemes for EGS which would be required in larger numbers in a year of widespread drought.

The report reviews the overall problems of uncertainties of farm production in dry-land agriculture in the State and the need for and policy about irrigation. The survey shows that irrigated farms suffered the least loss of income during drought. This underlines the importance of extension of irrigation in the State. Maharashtra is a state with potentially inadequate availability of water for irrigation. This calls for wider spread of irrigation water. Once upon a time this question was being discussed in terms

of "protective irrigation". With new varieties of seasonal food and non-food crops extensive irrigation can be economically beneficial to farmers while leading to the generation of maximum additional income per unit of water. There is reason to believe that in the use of irrigation water from public irrigation project in the drought-prone areas of the State this basic requirement has not been kept in view. The contrast between irrigated and dry agriculture in a year of drought, highlighted in this study, re-emphasises the need for change in policy in this regard.

Gokhale Institute  
of Politics and Economics  
Pune 411 004  
30th December, 1983

N. Rath  
Director

## PREFACE

The chronic risk of drought in Maharashtra has been recognized for over a century now. A few protective irrigation works were completed in the drought-prone areas of the then Bombay Province by the British in the late 19th and the early decades of the 20th century to provide some redress to the countryside which was being ravaged due to recurring famines. The interest that the British showed in the extension of irrigation works in the Deccan cooled off by the 'twenties. It was only after 1950 that a number of new major irrigation works were taken up in the State. However, the progress during the last twentyfive years has been quite slow. Actually the need for water storage on a massive scale was always obvious and the State did not lack either the technical ability or the resources to take up irrigation works on a large scale to meet the perpetual hazard of drought. In fact, the State Irrigation Commission of 1960 was confident that by 1980 the entire surface water potential in the State could be harnessed. However by 1975 only about six per cent of the ultimate irrigation potential of the State has been realised. During the same period, the huge Koyana hydro-electric project for providing electricity to the industry in Bombay was completed on a priority basis.

The programme of irrigation was initially taken up with a view to alleviate the severity of drought. The 'protective' aspect of the irrigation works, however, receded into background in the early 'thirties and the productive aspect - intensive use of water for a lucrative crop like sugarcane - gained in importance. The establishment of co-operative sugar factories in the State during the 'fifties gave a tremendous boost to the cultivation of sugarcane. Consequently the benefits of irrigation became restrictive in spread and much of the drought-prone tract which could have been given protection continued to remain water-starved.

In 1972 the rainfall was deficient over large tracts of the State and this brought the level of foodgrains production in the State to half the normal level. At the peak distress period nearly 50 lakh rural workers flocked at the scarcity relief works. The basic weakness of agriculture in Maharashtra pointed out by the Famine Commissions at the turn of the last century was again brought to the fore by the drought of 1972. It was, therefore, considered important to study the drought of 1972 in Maharashtra in the context of agricultural and irrigation development in the State.

The report begins with an overview of famines and famine policy in India. In Chapter II, the agricultural situation in the Maharashtra State, in the post-1947 period is examined. In the following Chapter, the development of irrigation is traced from 1875 when a beginning of protective

irrigation was made in the Deccan area. The utilization of the impounded water resources is examined and this brings forth the overwhelming importance of sugarcane in the irrigated agriculture in Maharashtra. The impact of the drought of 1972 in terms of the loss of crops, loss of livestock and other assets, loss of employment and the alternative employment provided by the Government in the form of scarcity relief works and the effective income levels in 1972 are examined in Chapter IV. Chapter V deals with the nature of scarcity relief works, the wage rates on the relief works and the significance of these works in relation to the improvement of agriculture. In Chapter VI the famine relief policy as enunciated by the British and the one followed in the post-1947 period are compared with respect to the approach to famine relief, the nature of relief works and the wage policy. The alternative suggestions in this respect are also briefly discussed in Chapter VI. In the last Chapter the need for a revision of the policy with respect to development of irrigation in the State in the framework of a comprehensive plan covering the drought-prone areas of the State is discussed.

The present study of drought in the Maharashtra State was one of the research projects taken up in the Agro-Economic Research Unit located at the Gokhale Institute of Politics and Economics, by the Ministry of Food and Agriculture. The field investigations were started in December 1972. The investigational work continued during the year 1973 and the first half of the year 1974. The primary data was supplemented by the data collected from the official sources at the State, District and Village levels.

We would like to place on record our thanks to the various official agencies at the State level particularly the Bureau of Economics and Statistics, the Groundwater Survey and Development Agency and the Irrigation Department, for their kind co-operation in supplying the requisite information. We would like to thank the officials at the village level and the villagers for their full co-operation during field investigations. Unstinted co-operation of Smt. Kumud Pore and Shri R.P. Nene for the time spared to read the draft report and the valuable suggestions made is gratefully acknowledged. During all the phases of the study Smt. Kumud Barve provided statistical assistance, Shri Jagtap carried out the investigational work, Dr. Paithankar rendered valuable help in obtaining data from the secondary sources, and Shri Inamdar typed the Report; Smt. Suman Barve prepared the maps. Our thanks are due to them for their earnest co-operation.

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Sulabha Brahme

May 1, 1976.

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## CHAPTER I

### FAMINE IN INDIA : AN OVERVIEW

Recurrence of droughts and famine<sup>1</sup> has been accepted as a fact of life in India since historical times. Measures to alleviate the severity of the drought in the form of development of irrigation facility and short term relief measures to save human life were in vogue from ancient times. However, the level of technological development, the economic conditions and the social structure in the given period determined the nature and the efficacy of such relief measures. In the pre-British period the economy was not integrated and there was a considerable local level self-sufficiency. However, in the event of a severe famine, the numbers relieved depended on the benevolence of the ruler and the capacity of the government to reach the needy population. The rulers were not guided in their efforts by economic calculus; their efforts were constrained mainly by the technological factors. The industrial revolution brought about a material change in the transport and production technology and this facilitated the development of a world-wide market, so that the local level self-sufficiency was disrupted. At the same time the growth of mechanized transport facilitated the movement of foodgrains and other aid to the stricken areas.

However by this time, imperial rule was imposed on the Indian Subcontinent. Even though the possibilities of extending relief had vastly increased the measures were now largely determined by the considerations of costs of such relief measures. The Government did accept the responsibility to take measures, as far as possible, to protect the population of the distressed districts from starvation. Yet the Government held that "the task of saving life irrespective of the cost is one which is beyond their power to undertake". (IFCRI, 1880, p.17). The results of such a policy are reflected in the records of deaths due to starvation and pestilences during the major famines of the last century<sup>2</sup> and the Bengal famine of 1942-43.<sup>3</sup> A brief review of the changing politico-economic situation and the measures and policies adopted by the Government to meet the crisis of famine in India is taken in the following sections.

#### *Pre-British India*

Systematic records of famine - its spread, severity and the measures taken to alleviate the distress are few and far-between for the pre-British period. Only some scant indications of how people tried to fend themselves under such an eventuality and the help extended by the rulers are available. One of the important measures was the storage of foodgrains by the cultivators when the harvest was good as a cushion against the years of dearth. In the eventuality of a drought, the people would fall back upon the stored up grain, and could generally tide over one

bad harvest. They were partially helped by the Government<sup>4</sup> or private charity through supply of foodgrains and opening up of *anna chhatra* (free cooked-meal centres). Such relief measures were generally confined to the capital city.

It was customary to grant partial or full remissions of the land tax depending upon the extent of the crop failure and also to extend help to resume cultivation in the following season. As a permanent measure, Government undertook the work of constructing irrigation canals and supplied loans for sinking wells.<sup>5</sup> The kings and *sardars* employed a number of villagers in different departments of the state, in infantry, cavalry, elephant and other branches of services (on an average 3 to 5 persons were employed to service one army personnel). By this means also the cultivator could support himself in times of scarcity and did not have to depend on charity and alms. Due to the shortfall in the production, the prices of foodgrains often doubled or trebled in the famine stricken areas. The Government reportedly arranged for the supply of grain by importation from other countries and abolished tolls to facilitate the movement of foodgrains. However, the efforts to meet the shortages were necessarily restricted during this period, due to the lack of mechanical transport facilities. Transportation of foodgrains on pack of bullocks was very slow and the movement was constrained due to the paucity of water and fodder in the drought-hit areas. Relief was also limited "by the location of Mughal armies which intercept all the foodgrains and by the rich and the strong engrossing and taking all to themselves." (Mukerjee, 1967, p.22).

If droughts recurred year after year and were wide-spread people would be forced to leave the countryside. More often than not they would succumb on the way. Because of the contamination of water, epidemics would break out and take a heavy toll as no preventive medicines were available. Thus in the wake of a wide-spread drought would follow deaths due to starvation, pestilence and fever (Loveday, 1944, Etheridge, 1968). After a severe famine the villages would often turn desolate and the rulers had to make special efforts for the return of the cultivator to his land and the rehabilitation of cultivation. As land tax was the major source of Government income, restoration of cultivation was of prime importance to the Government.

### *British Period*

The situation changed drastically with the occupation of the country by the East India Company. The drain of the resources of the country started through the monopoly trade practices of the company; and later the flooding of the Indian market by machine-made goods resulted in the destruction of native manufacturing, transport and other non-agricultural economic activity. After the establishment of the Crown Rule in 1857, Indian people had to carry the huge burden of Home Charges, maintenance of a large alien army, costly foreign bureaucracy in addition to the commercial

exploitation. The disbandment of the native army and the collapse of weaving and other major artisan crafts robbed the Indian people of their diversified occupational base and they were forced to return to land.

Agriculture and agricultural related trade, craft and service activity was now almost the only source of livelihood open to the masses of Indian people. Almost the entire population was thus forced to depend on land, the return to which fluctuated violently from year to year depending upon the vagaries of monsoon. The traditional grain stock with the individual cultivator soon disappeared, under the pressure of inflexible land revenue to be paid in one instalment all in cash. In the period 1820-50 a decline in the prices of foodgrains was experienced; this made the problem of revenue payment all the more acute. This compelled the cultivator to sell his grain or to shift to cotton, jute or indigo cultivation to get some ready cash. The area under commercial crops increased also due to the pressure exerted by the rulers. Exports of rice and wheat increased over time, and even in a distress year exportation of foodgrains continued.<sup>6</sup> Indian cultivator was thus drawn into the world market with the development of modern transportation, and become vulnerable to the market fluctuations. The cultivators usually had to bear the burden when prices slumped whereas the trading intermediaries would usually reap the benefit when the prices moved up.

All these factors resulted in the increased impoverishment of the cultivator. He was hardly left with any assets or grain to fall back upon in times of scarcity, because of the new politico-legal set-up introduced by the alien rulers. In the new order, land became a private property, mortgageable, transferable, and alienable. The newly introduced institution of courts, with their warrants and decrees afforded the landlord and the moneylender unprecedented mechanism for drawing away from the cultivator everything but a bare minimum required to keep cultivation going. Added to this was the fact that the pressure on land was increasing continuously due to the return to land of large numbers displaced from traditional vocations. This made the position of landlords and moneylenders much stronger than during the earlier period and the terms of tenancy and credit became more onerous. The loans were usually drawn to meet the shortfall in a bad year and to meet some contingency and very little could be added by way of productive investment, even in a good year, because of the debt burden. Thus, the burden of debt increased over time. This resulted in increased transfers of land from cultivators to landlord-moneylender, multiplication of tenancies and subtenancies and swelling of the ranks of landless cultivators. As the rental levels were high it was more profitable for the landlord to lease out the land on share cropping basis (usually half a share) than to cultivate it himself. The surplus extracted through interest and rent was not attracted into improvement of land and agricultural production as it was

more lucrative to invest the funds in moneylending and land acquisition. As the capital needed for development in agriculture was siphoned off, the position of cultivator further deteriorated.

The effect of all these factors surfaced when there was a shortfall in the rains and the crop production was adversely affected. The prices of foodgrains would increase manyfold under such circumstances and the people had no money to buy the foodgrains. Drought conditions, thus, brought in its wake severe distress because of the impoverished conditions of the agricultural population who no more had any sustaining power to tide over even a short duration calamity. With the failure of crop, there would prevail a work famine and a cash famine.

In the initial years, the alien Government looked on each famine as an isolated and unexpected event and dealt with the situation hesitatingly and uncertainly. The policy, particularly, with regard to the supply of foodgrains was highly detrimental to the public interest. State interference in trade was deprecated on the plea that it might drive the private merchants out of trade. Not only the responsibility of grain storage as buffer stock (accepted by some of the early rulers) was anathema to the new rulers but even the responsibility of importation of foodgrains into famine-hit areas was avoided,<sup>7</sup> notwithstanding the fact that despite the enormous price rise, private trade failed to move stocks of foodgrain into the famine tracts (due to factors like lack of ready capital and transportation facility). The inevitable consequence would be colossal human suffering and high mortality due starvation and pestilences. Subsequently a need to investigate into the 'Famine problem' became very pressing and this led to the evolution of a famine policy.

#### *Famine Policy*

"During the first quarter of the present century (19th century) the position of the British in the country was not such as either to create any sense of a general obligation to give relief or to supply the means of affording it. During the next 30 or 40 years as the country became settled and all branches of administration improved, the sense of this obligation was developed and more and more fully acted on, but there can be little doubt that on many occasions the wants of the people were very incompletely met and that much suffering and mortality must have ensued". (IFCR, I, 1880, p.27).

When the disastrous famine of 1866, commonly known as the Orissa famine supervened, the principles and methods of relief administration were still unsettled and unformed. Rice refused to 'flow' to Orissa in accordance with the 'laws of supply and demand' and thousands died of starvation. The Orissa famine may be regarded as the turning

point in the history of Indian famines; in the course of the enquiry conducted into it by the Commission, foundations of a famine policy were laid down. The Report of that Commission was not immediately fruitful, so far as the formulation of a system of relief was concerned, but it effectively called attention to the responsibilities which rested on the Government in famine years.

Accordingly, when the failure of rains of 1868 caused intense famine in Rajputana and severe scarcity in parts of N.W.P., the Punjab and other regions action was taken by the Government to relieve distress. The humane principle of saving every life was enunciated and a departure was made from the hitherto accepted policy of leaving to public charity the duty of providing funds for the gratuitous relief.

Yet when a great famine burst upon Madras and Bombay and later upon N.W.P., Oudh and the Punjab (1876-78) the famine relief was to a large extent insufficient and perfunctory organized. The private trade, hampered by want of railways and communications failed to meet the demand for food. The mortality was in consequence very high. Subsequently Famine Commission was appointed to inquire into the extent of distress and to make policy recommendations. The Famine Commission of 1880, formulated principles for the proper handling of the famine situation and suggested particular measures of a preventive or protective character. The Commission recognized to the full the obligation imposed on the State to offer to the necessitous the means of relief in time of famine. It was, however, advised to exercise prudence and restraint in extending relief<sup>8</sup> such that the population remains thrifty, self-reliant and does not drift into laxity and the structure of society does not get impaired. How to apply this principle in practice is codified in the Famine Code. The Report of the Famine Inquiry Commission of 1880 formed a basis of the Famine Codes prepared by the Provincial Governments during 1890s. Famine was viewed as a problem of temporary lack of employment and the principal form of relief was to be offered by opening relief works. Broad instructions of action and practical instructions of relief operations are listed in the Codes and have been in use till to-date.

The Code begins with 'Standing preparations'; the Government must keep themselves informed through district, taluka and village level officials of conditions of rainfall, state of crop, etc., and must establish 'test works' if crops fail or prices of grains rise sharply. If the number of workers on test work goes on increasing then the famine may be declared and Famine Code applied. Relief works are to be opened up and on large public works camps are to be established with attendant facilities of shelter, water supply, medical care, etc.

The Code lays down that the wage should be the *lowest sufficient* to maintain healthy persons in health. Those who



cannot work are to be given cooked food on an appropriate ration scale. The dependents — old, disabled and young children of those working on the relief works, the *pardanshin* women, are to be given gratuitous relief. The other measures included steps to preserve useful cattle, relaxation of forest laws for the duration of the famine, suspension of revenue and grant of loans for digging well, land improvement and purchase of seed to help restore cultivation, advances to weavers etc.

The Government, so far was viewing famine as a natural calamity in a country like India; the large number of deaths, harrowing human sufferings and resulting unrest during the famine, however, compelled the Government to accept certain responsibilities for famine relief. The series of famines in the closing decades of the 19th century imposed on the Government considerable costs in terms of the income lost, e.g., land revenue and other duties, and the expenditure for the famine relief. At the same time the alien rule responsible for the impoverishment of the people was being more and more resented and organised political opinion against the foreign rule got crystallized. Subsequently enlightened self-interest and political expediency compelled the Government to consider certain preventive steps against the recurrence of famines.

#### *Extension of Irrigation*

In the Pre-British period public works like a large number of tanks in Southern India, the grand Anicut built in the 2nd century A.D. and irrigating about 2.4 lakh hectares in the beginning of the 19th century, the Western and Eastern Yamuna canals and the Hasli canal on Ravi dug during the 14th to 18th century together with a number of small tanks and wells provided for irrigated agriculture. (ICR, I, 1972, pp. 68-69).

With the advent of the British rule, and the liquidation of a large number of kings and *Jahagirdars* many ancient irrigation works were neglected and went into disrepair. The British paid but little attention to this problem in the initial period. The problem of irrigation came to the fore because of the repeated menace of famines. In 1861 in the Report on the Famine in the N.W.P., Col. Baird Smith recommended<sup>9</sup> the extension of irrigation system as an important protective measure and suggested that at least one third of the cultivated land be brought under irrigation.

Sir Arthur Cotton stressed during the eighteen seventies the need to give priority to the construction of irrigation-cum-navigation canal system rather than to the extension of railways.<sup>10</sup> A Famine Insurance Fund was created in 1877; an amount of Rs. 1.5 crore raised through fresh taxation was put under the head of Famine Relief and Insurance; the actual famine expenditure and the expenditure on protective works was to be debited to this account. A

major portion of the expenditure on protective works, however, was spent for the construction of railways. A few major irrigation works like Sirhind canal, Lower Ganga canal, Western Yamuna canal, Sone canal, Godavari and Krishna delta systems were completed during the period 1870-1900.

An Irrigation Commission was appointed in 1901 and the report of the Commission submitted in 1903 recommended a number of protective irrigation works in different provinces and it also laid stress on supporting private effort for irrigation development through *tacavi* loans, low interest rate, etc. But the progress of irrigation did not get accelerated. The major works taken up subsequently included the Punjab canal colonies, Sarda canal, Gong canal, Godavari, Pravara and Nira canals, etc. After the beginning of the 20th century, India was not hit by a severe famine and the efforts at creating protective irrigation slackened. In 1910-11 —1914-15 about 18 per cent of the net cropped area in the territory now comprising the Indian Union was irrigated while in 1945-46 — 1949-50 the corresponding proportion was 19 per cent.<sup>11</sup>

The other policy recommendation was to strengthen the economic capacity of the cultivator by extending *tacavi* loans and by reducing the burden of high rental charges, heavy indebtedness and high interest charges. With this view Land Improvement Loans Act (XIX) of 1883, Agricultural Loans Act (XII) of 1884, new tenancy laws (U.P. (1901), Bombay (1905), etc.) were passed. However, the tenants were too weak to protect themselves against the extractions made by the landlords and the new legislation provided little relief to the tenant. The landlord was often in a position to circumvent the legal provisions and in cases of litigations the tenant was almost always a loser. Similar problems were faced in relation to the enforcement of regulations relating to credit. The problem of lack of capital and hence agricultural improvement persisted and agricultural production stagnated. There was no increase in the production of foodgrains for about 50 years from the end of the 19th century to mid-20th century; the average annual production of foodgrains remained around 70 million tonnes from 1894 to 1946. Consequently the per capita availability of foodgrains declined from about 260 kg. per annum in 1893-94 —1895-96 to about 180 kg. per annum by the decade 1936-37 to 1945-46.

### *Bengal Famine*

After the severe and protracted famine of 1899-02 scarcity conditions did occur in a number of years, but a widespread famine involving heavy loss of life was not experienced till 1942. This led to a complacency in relation to the measures which were necessary for the mitigation of famine.

The food situation in India as noted above had moved over time from bad to worse. The per capita net output of

foodgrains was only about 180 kg. per annum. Despite the very low standard of living in the country the foodgrains supply was inadequate and import of rice had become a normal feature of the Indian Economy.<sup>12</sup> With the outbreak of the Second World War no steps were taken to meet the contingent situation. The domestic supply situation broke down when the imports of rice from Burma were cut due to the Japanese Occupation in 1942. Bengal was hit very severely and an unprecedented famine took a toll of millions in Bengal.

During the period 1928-37, the estimated foodgrains supply in Bengal in terms of weekly requirement was put at a quantum adequate for a period of 54 weeks, while in 1943 the total supplies available were equal to 49 weeks' requirements. The shortfall was thus not serious. However, coupled with the stoppage of importation of rice from Burma, overall dislocation of normal channels of trade and distribution as fighting reached the borders of Bengal and the consequent speculation and hoarding of the foodgrains by landlords and traders, the prices of rice sky-rocketed. For example, in Burdwan district the price of medium rice climbed from Rs. 20 per quintal in November 1942 to Rs. 80 by May 1943; by August, 1943, rice was quoted at as high as Rs. 130 per quintal in most districts (Bhatia, 1967, p. 323).

This price rise has to be juxtaposed with the poverty of the large masses of rural Bengal. There were about 2 million wage labourer families and 5.5 million families whose income permitted only a bare subsistence even in normal years. In October 1942, a typhoon hit the Western districts of Bengal (Aykroyd, 1974, p. 73) and tidal waves swept an area of about 8300 sq. kilometres. Consequently the poorer people from the typhoon-hit delta districts were the worst sufferers. Rice scarcity hit first the landless labourers and the artisan. Lacking money to buy food they sold their utensils, tools, etc. and as this cash was soon exhausted hordes of people moved towards the city of Calcutta. There was no organized effort to protest, or to procure food by dispossessing the hoarders of foodgrains. The people were too weak, and lacked leadership as the political leaders of the parties fighting for India's emancipation had been incarcerated by the British rulers. Consequently the people succumbed passively to the calamity. In the beginning, the Government refused even to recognize the crisis; the efforts made later were half-hearted, *ad hoc* and totally inadequate. The report of the Famine Commission put the figure of deaths at 1.5 million while the unofficial estimates put it between 3 to 4 million (Aykroyd, 1974, p.77).

The Bengal famine again highlighted the basic malady of the Indian economy viz. the progressive impoverishment of nearly 30 to 40 per cent of the India's rural population (composed mainly of agricultural labourers and small tenant cultivators) who lived even in normal years below the subsistence level; consequently even with marginal shortages,

the situation takes a very ugly turn. The remedy lay in an overall improvement in the foodgrains production and in the improvement in the economic conditions of the lower sections of the rural population.

After 1950, even though, there was a definite increase in the foodgrains production<sup>13</sup> both through an extension in the area under cultivation and some increase in productivity, yet the total production was not sufficient and imports of foodgrains continued to be a normal feature. The gravity of the situation was revealed by the crisis situation in 1965-66.

#### *Bihar Famine*

1965-66 was a drought year. Several States viz., Bihar, U.P., Orissa, West Bengal, Rajasthan, Madhya Pradesh, Maharashtra were affected. Bihar was the worst hit State. There was a shortfall by about 20 per cent in the overall foodgrains production. The Government was already heavily dependent on foreign countries, particularly the U.S.A. for the import of foodgrains. The quantum of imports had to be increased and the Government requested the U.S.A. for an additional two million tonnes; the U.S.A. did not respond promptly, presumably with a view to putting pressure on the Indian Government to change its agricultural strategy. The Government went on a worldwide appeal and aid did flow in but not without a cost. During the period 1965-1968 a sum of Rs. 722 crore was put into the drought-hit areas and the international aid accounted for as much as 43.8 per cent of the total expenditure on relief (Singh, 1975, p. 203). The aid under PL 480 from the U.S.A., as also from Canada, Australia, Soviet Union and voluntary Christian agencies like CARE (Co-operation for American Relief Everywhere), CORAGS (Church World Service and the Lutheran World Service) and international agencies like UNICEF, the Red Cross, OXFAM, etc., poured in, in terms of foodgrains, milk powder, medicine, clothing, etc. But in the process, a worldwide propaganda depicting India as a poor country going begging as it has failed to manage its economic affairs, was afoot. The dangers of dependency on foreign nations for the supply of vital foodgrains came to the fore again.

In 1966-67 the people were not as passive as the famine victims of 1943. They articulated their demands but these were not, by and large, directed against the hoarders or the landlords who very often were responsible for their distress. The demands were addressed to the Government, but the Government failed to impose effectively a levy on foodgrains and make adequate supplies of foodgrains available at the village level. The prices of foodgrains doubled or even trebled in areas of shortages. Starvation deaths were averted thanks to the extensive help pumped in by the voluntary agencies in the form of school feeding programme and other gratuitous relief. About 100 million people were affected by the famine and 3.2 million worked at the peak on relief works and 2.3 million were in receipt of gratuitous relief.

(Singh, 1975, p. 177). The scarcity and famine relief cost the Government Rs. 399 crore during the period 1965-68.<sup>14</sup>

In response to the gravity of the 1966-67 famine suggestions were put forward to appoint a Famine Commission to revise the outdated Famine Code, study the effect of famine on people and evolve a national drought protection policy. However, the sense of urgency created in the wake of the famine died down as soon as the crisis was over.

"The famine revealed the dimensions of our poverty, the retrograde character of our land structure, the continued exploitation of our landless and small farmers, ... the irresponsible power of the new class in rural areas." It was clear that, "The Famine Codes are no substitute for structural change; scarcity relief is no synonym of social action" (Singh, 1975, p. 277).

#### *The Present*

All the problems touched upon by K. Suresh Singh in his 1967 study of Bihar Famine persist to-date. Despite the green revolution, the extension of irrigation facilities<sup>15</sup> and a sizable increase in the foodgrains production,<sup>16</sup> the foodgrains production falls short of the needs during the years of poor harvest. The imports of foodgrains started climbing up again from the drought year of 1972-73.<sup>17</sup> The expenditure on famine relief is mounting; for example, in Maharashtra State the provision made for famine relief in 1965-66 was Rs. 11.77 crore, it was Rs. 42.90 crore in 1971-72, Rs. 87.25 crore in 1972-73 and Rs. 141.08 crore in 1973-74.

The green revolution has turned out to be almost a spent force by the '80s and if the rains fail in 1982, we will again go through the same ritual of test works, famine relief works, gratuitous relief, the 'low wage' ethic and foodgrains importation. The Famine Code developed during the heydays of imperial rule still serves as a model and the approach still is short term alleviation of the immediate distress. The *ad hoc* schemes like 'Drought Area Development Programme', 'Small and Marginal Farmers Agency', 'The Employment Guarantee Scheme', are helping a section of the rural poor only in their struggle for survival. But they do not reach the basic problem of strengthening the resource base of the labouring population and organization of co-operative endeavour on the basis of which alone the economic situation of the population surviving on the margin can be improved.

The present study of the 1972-73 drought in Maharashtra, one of the advanced States in India, was taken up with a view to examining the impact of drought on crop production, the consequent food and cash shortages; the policy in relation to the relief works opened up to provide wage employment and the impact of the same on the affected population.

#### FAMINE IN INDIA : AN OVERVIEW

11

The study tries to bring together the various aspects of the problem and in the process attempts to highlight some of the issues that arise repeatedly in the wake of the crisis but have remained unresolved so far.

## CHAPTER II

### AGRICULTURAL SITUATION IN MAHARASHTRA

The Maharashtra State has a total area of 307762 square kilometres extending over 800 kms. from east to west and about 720 kms. from north to south with a long coast-line of 720 kms. all along the west. The State is divided for administrative purpose into four divisions viz. the Bombay division which includes the Greater Bombay City District, three coastal districts or the Konkan area, two Khandesh districts viz. Dhulia and Jalgaon and the Nasik district; Poona division or the Western Maharashtra which includes the *ghat* area and the region to the east of the *ghats*; the Aurangabad division or the Marathwada region that includes five districts from the erstwhile Hyderabad State and the Nagpur division or the Vidarbha region which covers eight districts located in the eastern part of the State (Map I). There are 235 talukas in the State with 35778 inhabited villages and 289 towns. The total population of the State was 504 lakh according to the 1971 Census of which 68.8 per cent was living in the rural areas (Table 2.1).

#### *Physiography*

The State can be divided into two major physiographic divisions namely the coastal region known as the Konkan area and the Deccan Plateau, built up in main of nearly horizontal volcanic lava flows described as the 'Deccan trap'. The Deccan Plateau has been carved out into three major river basins viz. the Godavari, the Krishna and the Tapi basin. The Godavari basin comprises the Godavari basin proper and the Wainganga sub-basin. Its main tributaries are the Purna, Pravara, Sindphana and Manjra. The Krishna basin is divided into Krishna basin proper and the Bhima sub-basin. The Tapi basin has been carved out in the northern extremity of the Deccan Plateau. (See Map II).

The State has a tropical climate. There are large variations in the rainfall among the different parts of the State on account of the topography and the distance from the monsoon tract. The annual rainfall ranges from 500 mm to 5000 mm. The State receives its rainfall primarily from the south-west monsoon. The south-west monsoon sets in by early June in Konkan and rapidly extends in the north-easterly direction and by 1st July almost all the parts of the State receive their first showers. The rainy season continues till October. The rainfall during the winter season, due to the north-east monsoon constitutes only 5 to 8 per cent of the total annual rainfall.

The rainfall is the heaviest in Konkan (3000 mm), on the Sahyadri ridges and in the Maval area. To the east of Maval area there is a 30 to 50 kms. wide transition tract and to the east of this lies the low rainfall belt with a

Table 2.1 : SOME BASIC STATISTICS RELATING TO THE DISTRICTS OF MAHARASHTRA

District/ Division	No. of Taluk- kas	No. of Villages (inhabited)	Area in sq. km.	Net area sown ('00 hectares) 1970-71	Inten- sity of cropping@ 1970-71	Per cent area irri- gated* 1970-71	Annual total for 1970		Total population (1971)	Rural population (1971)
							No. of rainy days	Rainfall (mm)		
1	2	3	4	5	6	7	8	9	10	11
Greater Bombay	3	-	603	70	102.9	2.8	75.6	1917.2	5970575	-
Thana	13	1588	9553	2917	103.6	1.4	81.8	2258.6	2281664	1454915
Kolaba	14	1699	7198	2190	108.8	2.1	92.9	2956.3	1263003	1110413
Ratnagiri	15	1514	13040	3635	102.6	5.6	101.7	3305.7	1990583	1823400
Nasik	13	1628	15582	8703	103.6	12.1	50.9	1022.0	2369221	1690749
Dhulia	10	1379	13143	6644	110.2	11.0	42.1	674.0	1662181	1374445
Jalgaon	13	1423	11771	8024	104.9	12.3	44.5	740.7	2123121	1620975
BOMBAY DIVISION	81	9231	70890	32273	105.5	9.5	-	-	17660348	9074897
Ahmednagar	13	1312	17035	12529	105.2	13.2	35.5	478.8	2269117	2017617
Poona	14	1481	15640	10255	109.4	11.6	53.3	1150.3	3178029	1848255
Satara	11	1142	10492	7020	107.4	13.5	48.6	803.2	1727376	1500119
Sangli	8	539	8563	6222	102.7	10.6	45.6	624.8	1539820	1252922
Solapur	11	948	15021	11543	109.2	11.6	37.0	584.3	2253840	1637288
Kolhapur	12	1083	8059	4034	101.1	12.4	77.3	1931.5	2048049	1607804
POONA DIVISION	69	6505	74810	51603	106.6	12.2	-	-	13016231	9864005

(Contd..)



Table 2.1 (Contd.)

1	2	3	4	5	6	7	8	9	10	11
Aurangabad	12	1866	16200	13134	110.0	7.1	45.7	725.8	1971006	1641745
Parbhani	8	1505	12489	9419	108.8	2.6	44.9	821.0	1506771	1264833
Bhir	7	1028	11227	7763	111.2	6.6	40.5	668.4	1286121	1136820
Nanded	8	1324	10492	7362	104.1	3.5	50.8	901.1	1397762	1169577
Osmanabad	11	1387	14117	10583	104.7	8.0	51.1	809.9	1896689	1659699
AURANGABAD DIVISION	46	7110	64525	48261	107.9	5.8	-	-	8058347	6872674
Buldhana	5	1232	9745	6943	104.3	2.3	46.8	802.8	1262978	1041170
Akola	6	1489	10567	8002	101.4	1.0	48.2	846.5	1501478	1148129
Amravati	6	1637	12210	7129	100.4	2.0	49.3	877.3	1541209	1116526
Yeotmal	5	1647	13925	8158	101.2	1.1	53.9	991.6	1423677	1229728
Wardha	3	962	6307	4242	101.9	2.4	55.6	1090.3	779562	588460
Nagpur	5	1625	9928	5434	101.8	7.3	59.4	1176.0	1942688	887331
Bhandara	3	1500	9214	3891	131.8	27.0	65.2	1446.4	1585580	1405067
Chandrapur	6	2840	25641	6483	109.6	16.1	63.2	1397.6	1640137	1473037
NAGPUR DIVISION	39	12932	97537	50282	105.1	6.7	-	-	11677309	8889448
MAHARASHTRA STATE	235	35778	307762	182419	106.3	8.5	-	-	50412235	34701024

DROUGHT IN MAHARASHTRA

Notes : @ Gross cropped area / Net cropped area x 100  
 \* Gross irrigated area / Gross cropped area x 100

Source : Statistical Abstract of Maharashtra State for the year 1970-71.

rainfall averaging less than 625 mm per year and at some places it is only 500 mm per year. The precipitation gradually increases as one moves further to the east and is of the order of 1500 mm in the eastern-most districts of the State (Tables 2.2 and 2.3).

The total annual quantity of rainfall received in the State is 11250 mcft which works out to 3.5 feet per acre if averaged over the entire area of the State (Kulkarni, 1970, p.3). The total quantity is, however, quite unevenly spread over the different regions of the State.

The high rainfall region of the State which covers about 13 per cent of the area receives more than a quarter of the total quantity of rainfall. The land in the high rainfall coastal region is highly undulating with a limited soil cover in places. The region is not, thus, suitable for irrigation on a large scale. There is also a considerable impoverishment of the soils due to severe erosion. The region, however, provides excellent sites for storages of water which could be used for irrigation in the low precipitation areas. In the second zone viz. the moderately high rainfall region that covers another 13 per cent of the area about 19 per cent of the total rainfall is received. The assured rainfall region covers 40 per cent of the area and receives nearly 35 per cent of the total rainfall, with an average rainfall of 900 mm. The low rainfall area or the drought prone region receives only about 20 per cent of the rainfall which is spread over nearly 34 per cent of the area of the State. Because of the erratic and low rainfall, this tract, has the least vegetation. As a result the organic matter in the soil cover is poor. The ground slopes are steeper and cause severe erosion increasing the vulnerability of the region.

About one-third area of the State is liable to crop failure due to the vagaries of the monsoon. Various factors viz. variations in the aggregate precipitation, the date of onset of monsoon and cessation of the rainy season, the number of rainy days, the frequency and duration of dry spells govern the crop response in a given season. The margin between the necessary rainfall needed for the normal growth of the crops and the normal rainfall is very narrow in the low rainfall area. Hence the adverse effects of a small shortfall in the total rainfall or irregularities in the rainfall are serious in this tract. The soil cover in this region being generally poor and non-retentive of moisture longer dry spells result in a failure of crop. In the areas with assured or high rainfall crop failures are less frequent as there is a larger margin between the normal rainfall and the requisite rainfall for the crops grown, though the untimely nature of the rainfall does affect the yields.

Table 2.2 : CLASSIFICATION OF DISTRICTS AND TAHSILS IN MAHARASHTRA STATE ACCORDING TO THE AGRO-CLIMATIC ZONES

<i>Agro-climatic Zone</i>	<i>Districts with Tahsils</i>
I. Very high rainfall (2,500 to 3,000 mm) tract with lateritic soils	1. Ratnagiri - All Tahsils 2. Kolhapur - Chandgad
II. Very high rainfall (2,500 to 3,000 mm) with non-lateritic soils	1. Greater Bombay 2. Thana - All Tahsils 3. Kolaba - All Tahsils 4. Nasik - Igatpuri
III. Ghat zone (3,000 to 5,000 mm and above)	1. Satara - Mahabaleshwar 2. Kolhapur - Bavda, Radhanagar
IV. Transition - A (1,250-3,000 mm) with red to reddish brown soils	1. Nasik - Surgana, Peint 2. Poona - Khed, Maval, Mulshi, Velhe, Bhor 3. Satara - Jaoli, Patan 4. Kolhapur - Shahuwadi, Panhala, Karveer, Kagal, Bhudergad, Ajra, Gadhinglaj
V. Transition - B (700 to 1,250 mm) with greyish black soils	1. Nasik - Kalwan, Dindori, Sinnar 2. Dhulia - Akrani, Akalkuwa, Taloda, Nandurbar, Navapur 3. Ahmednagar - Akola 4. Poona - Junnar, Ambegaon, Poona City 5. Satara - Wai, Satara, Karad 6. Sangli - Shirala 7. Kolhapur - Hatkanangale, Shirol
VI. Scarcity zone with kharif-cum-rabi-cropping (500 to 700 mm)	1. Nasik - Baglan, Malegaon, Chandor, Mandgaon, Nasik, Niphad, Yeola 2. Dhulia - Shahada, Sindhkheda, Sakri, Dhulia 3. Jalgaon - Amalner 4. Ahmednagar - All Tahsils except Akola 5. Poona - Sirur, Haveli, Dhond, Purandhar, Baramati, Indapur 6. Satara - Khandala, Phaltan, Koregaon, Khatav, Man. 7. Sangli - All Tahsils except Shirala 8. Solapur - Karmala, Barshi, Madha, Malshiras, Pandharpur, Mohoi, Sangola, Mangalwedha

(Contd..)

Table 2.2 (Contd.)

<i>Agro-climatic Zone</i>	<i>Districts with Tahsils</i>
	9. Aurangabad - Vaijapur, Gangapur, Paithan
	10. Bhir - Manjalegaon, Patoda, Ashti
	11. Osmanabad - Parenda, Bhoom, Kallam
VII. Assured rainfall (700 to 900 mm) zone with mainly kharif cropping	1. Dhulia - Shirpur
	2. Jalgaon - All Tahsils except Amalner
	3. Solapur - South Solapur, North Solapur, Akkalkot
	4. Aurangabad - All Tahsils except Vaijapur, Gangapur, Paithan
	5. Parbhani - Partur, Jintur, Pathri, Gangakhed
	6. Bhir - Gevrai, Bhir, Kaij, Ambejogai
	7. Nanded - Mukhed, Degloor
	8. Osmanabad - Ahmedpur, Osmanabad, Latur, Tuljapur, Udgir, Ausa, Omerga, Nilanga
	9. Buldhana - All Tahsils
	10. Akola - All Tahsils except Washim
	11. Amravati - Melghat, Achalpur, Daryapur, Amravati
VIII. Moderate to moderately-high rainfall (900 to 1,250 mm) zone with soils formed from trap rock	1. Parbhani - Hingoli, Kalamnuri, Parbhani, Basmath
	2. Nanded - Kinwat, Hadgaon, Nanded, Bhokar, Kandhar, Billoli
	3. Akola - Washim
	4. Amravati - Morshi, Chandur
	5. Yeotmal - All Tahsils
	6. Wardha - All Tahsils
	7. Nagpur - Katol, Saoner, Ramtek, Nagpur
	8. Chandrapur - Warora, Rajur
IX. High rainfall (1,250 to 1,700 mm) zone with soils formed from mixed rocks	1. Nagpur - Umrer
	2. Bhandara - All Tahsils
	3. Chandrapur - Brahmपुरi, Gadchiroli, Chanda, Sironcha

Source : Report of the Study Committee on Employment Conditions of Agricultural Labour in Maharashtra State, 1973, pp. 117-118.

(Concluded)

Table 2.3 : DISTRIBUTION OF THE GEOGRAPHICAL AREA IN MAHARASHTRA BY AGRO-CLIMATIC ZONES

Region	Konkan*	Khandesh Nasik	Western Mahā- rashtra	Marath- wada	Vidarbha
Agro-climatic Zone	Per cent area under different zones				
I. Very high rainfall - lateritic soils	44.3	-	1.4	-	-
II. Very high rainfall - non-lateritic soils	55.7	2.3	-	-	-
III. Ghat	-	-	2.4	-	-
IV. Transition - A	-	4.0	15.4	-	-
V. Transition - B	-	17.9	11.3	-	-
VI. Scarcity	-	39.7	69.5	18.5	-
VII. Assured rainfall	-	29.6	-	59.8	19.9
VIII. Moderate to moderately high rainfall	-	6.5	-	21.7	43.3
IX. High rainfall	-	-	-	-	36.8
Total	100.0	100.0	100.0	100.0	100.0
Sq. km.	29791	40496	74810	64525	97537

\* Excludes Greater Bombay.

#### Crop Pattern

The crop pattern varies considerably between different areas of the State according to the agro-climatic factors. In the heavy rainfall region of Konkan paddy and *nachni* are the main crops. Paddy is the major crop in Bhandara and Chandrapur. In Kolhapur district paddy and sugarcane are the important crops. In Dhulia, Jalgaon and Nasik districts among the cereal crops grown jowar, bajra and wheat are important. Cotton is the major commercial crop in Jalgaon and groundnut in Dhulia district. Cultivation of sugarcane, grapes and onion in Nasik district and of bananas in Jalgaon district is noteworthy. In the scarcity zone, sugarcane

is the important irrigated crop. The major area in this zone is put to the cultivation of cereals like jowar, bajra, pulses and some oil seeds. In the assured rainfall region jowar, and cotton are the major crops grown and these are grown under dry conditions.

There are large variations in the average yields of various crops between different regions<sup>18</sup> of the State (Table 2.4). For example, in the case of rice, the yields, averaged over a period of 1964-65 to 1973-74, show variation from about 300 kg. per hectare in some talukas from the Marathwada region to over 1500 kg. per hectare in some talukas from the Konkan area. The average yield of rice in the heavy rainfall areas of Konkan was about 1300 kg. per hectare while it was around 580 kg. per hectare in the other areas of the State. In the case of kharif jowar, variation from about 400 kg. per hectare in the Marathwada region to 1200 kg. in parts of Jalgaon district was noted. The average yield of kharif jowar was relatively higher in the Transition zone viz. 736 kg. per hectare as compared to the average yield noted in the other areas of the State viz. 535 kg. per hectare. In the case of bajra, the inter-regional variations were less pronounced, the values of mean yield largely falling within the range of 200 kg. to 450 kg. per hectare. In the case of rabi crops, the average yields in the scarcity zone were considerably below the averages noted in the other areas. The respective figures of average yields in the scarcity zone and in the other areas of the State were 305 kg. and 430 kg. per hectare in the case of rabi jowar and 215 kg. and 340 kg. per hectare in the case of wheat (Dandekar, 1976, pp. 92-102).

The year-to-year fluctuations in the yields of different crops are also quite substantial (Table 2.5). For example in the case of kharif jowar the coefficient of variation was above 50 in half the number of observations. The year-to-year fluctuations were relatively less pronounced in the case of wheat, a crop grown mainly in the areas with black retentive soils and assured rainfall as compared to kharif jowar which is grown in the scarcity tract as well as in the assured rainfall region of the State.

#### *Problem of Agricultural Development*

The major technical problem in the development of agriculture in the Maharashtra State is the uncertainty and wide variability in the rainfall over a large tract of the State. The drought-prone area forms over 30 per cent of the geographical area of the State (Map III) and unless provision for assured water supply is made, the agricultural production in this region cannot be put on a stable and secure basis. The development of irrigation in the State is fraught with several problems because of the peculiar hydrological characteristics of the State. Yet it has been estimated that about 26 per cent of the cultivated area in the State can be brought under irrigation through surface sources (MSIC, 1962, p.53). In addition the ground

Table 2.4 : DISTRIBUTION OF THE 342 OBSERVATIONS ON CROP YIELD BY VALUE OF MEAN YIELD AVERAGED OVER THE PERIOD 1964-65 — 1972-73

Average Yield Kg/Ha.	Region	Rice					Jowar-Kharif					Bajra					Jowar-Rabi					Wheat									
		A	B	C	D	E	Total	A	B	C	D	E	Total	A	B	C	D	E	Total	A	B	C	D	E	Total						
No. of Observations																															
Up to 200		-	-	-	-	-	-	-	-	-	-	-	1	4	-	-	5	-	1	7	-	-	8	-	-	1	-	-	1		
200.1 - 300		-	2	-	1	-	3	-	2	-	1	1	4	-	8	8	11	-	27	-	2	8	1	-	11	-	1	-	6	6	13
300.1 - 400		-	2	-	6	1	9	-	2	-	6	4	12	-	9	1	3	-	13	-	1	4	8	4	17	-	2	-	6	15	23
400.1 - 500		-	-	-	4	2	6	-	2	1	11	15	29	-	5	5	-	-	10	-	1	3	9	3	16	-	1	-	-	5	6
500.1 - 600		-	1	1	3	5	10	-	-	3	5	13	21	-	-	-	-	-	-	-	5	2	1	2	10	-	-	-	-	1	1
600.1 - 700		-	1	4	-	4	9	-	2	1	-	5	8	-	-	-	-	-	-	-	3	-	-	-	3	-	-	-	-	-	-
700.1 - 800		-	-	5	-	2	7	-	-	1	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
800.1 - 1000		3	2	8	-	3	16	-	-	4	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1000.1 - 1200		8	-	2	-	-	10	-	1	2	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1200.1 - 2000		21	-	-	-	-	21	-	3	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>32</b>	<b>8</b>	<b>20</b>	<b>14</b>	<b>17</b>	<b>91</b>	<b>-</b>	<b>12</b>	<b>13</b>	<b>23</b>	<b>39</b>	<b>87</b>	<b>-</b>	<b>23</b>	<b>18</b>	<b>14</b>	<b>-</b>	<b>55</b>	<b>-</b>	<b>13</b>	<b>24</b>	<b>19</b>	<b>9</b>	<b>65</b>	<b>-</b>	<b>4</b>	<b>1</b>	<b>12</b>	<b>27</b>	<b>44</b>

Note : A - Konkan Region, B - Nasik, Dhulia, Jalgaon Districts, C - Western Maharashtra, D - Marathwada Region, E - Vidarbha Region.

Source : *Crop Insurance in India*, pp. 92-102.

Table 2.5 : DISTRIBUTION OF THE 342 OBSERVATIONS ON CROP YIELD BY VALUE OF COEFFICIENT OF VARIATION

Value of Coefficient of Variation	Crop				
	Rice	Jowar Kharif	Bajra	Jowar Rabi	Wheat
<i>Percentage Distribution of Observations</i>					
20.1 - 30%	26.3	5.8	7.3	7.7	15.9
30.1 - 40%	20.9	9.2	5.5	18.5	31.8
40.1 - 50%	18.7	26.4	30.9	20.0	36.3
50.1 - 60%	13.2	25.3	29.1	32.3	11.4
60.1 - 70%	7.7	16.1	12.7	13.8	2.3
70.1 - 80%	12.1	6.9	9.1	7.7	2.3
80.1 - 90%	-	4.5	1.8	-	-
Above 90%	1.1	5.8	3.6	-	-
Total	100.0 = 91	100.0 = 87	100.0 = 55	100.0 = 65	100.0 = 44

Source : *Crop Insurance in India*, pp. 92-102.

water resources can be exploited to increase further the irrigated area. However, the progress made in this respect has been rather slow; the percentage of gross irrigated area increased from 5.4 per cent in 1951 to 8.5 per cent by 1970-71 i.e. from 899300 hectares to 1648000 hectares, the gross sown area being about 194 lakh hectares in 1971.

During the Five Year Plans about half of the State Plan outlay earmarked for agricultural development has been allocated for the development of irrigation facilities, both surface irrigation through the State level projects and lift and well irrigation on private account, supported strongly by the State through the extension of credit on easy terms. The other agricultural programmes included contour bunding and land development, consolidation of fragmented holdings, supply of improved and hybrid seeds, fertilizers, research on dry farming, improved varieties etc., extension work, support to co-operative credit and marketing institutions, co-operative processing particularly the co-operative sugar industry.

The outlay for agricultural programmes, co-operation and community development was Rs. 65 crore and it was Rs. 51 crore for irrigation and flood control during the Second Plan period, the corresponding figures for the Third Plan were Rs. 114 crore and Rs. 65 crore respectively. The expenditure on these heads of development accounted for about 50 per cent of the total State Plan expenditure. This level has been maintained in the subsequent Plans. The physical achievements during this period appear to be impressive (Table 2.6). The number of irrigation wells increased by about 58 per cent during the period 1956-57 to 1972-73. The number of energized wells recorded about



twelve-fold increase. Nearly 75 lakh hectares of land in the State were covered by contour/graded bunding programme by 1974. This works to about 60 per cent of the bundable area in the State.

Table 2.6 : NUMBER OF IRRIGATION WELLS AND ENERGIZED WELLS AND THE NUMBER OF TRACTORS IN MAHARASHTRA STATE

Year	No. of wells used for irrigation purpose*	No. of Oil Engines	No. of Electric Pumpsets	No. of Tractors
1956	464866	26715	2108	2319
1961	557377	63747	6503	1427
1966	626757	146786	37979	3274
1972	733016	173678	169778	5606

\* The years referred to in the case of No. of irrigation wells are 1956-57, 1961-62, 1966-67 and 1972-73.

The major and medium irrigation projects taken up in the State involved an estimated investment of about 40 crore during the period 1950-1960. An investment of Rs. 269.2 crore was made between 1960 and 1973. The allocation made for the irrigation projects in 1973-74 was Rs. 60.4 crore. For the Fifth Plan period (1974-79) an outlay of Rs. 500 crore has been proposed for the major and medium irrigation projects, about 2/3 of which will be needed for the continuing projects. (MFYFP, 1973, pp. 103-105). The major irrigation projects completed so far required on an average 11-year period for the completion of the construction work. A period of at least ten years is considered necessary to achieve full utilization of the irrigation potential created. Five major irrigation projects started during the 'fifties were commissioned during the later half of the 'sixties. It was noted in 1974 that about 40 per cent of potential irrigable area created under these projects was actually brought under irrigation.

The other important source of irrigation is the underground water resource. However, in Maharashtra State the harnessing of underground water resources is fraught with a high element of risk. Unlike the regions of alluvial plains, where once the depth of the water table is known, it can be assumed that bores made approximately to that depth will strike water, in the Deccan, the depth at which an aquiferous bed will be found, its size and the yield vary with the structure of rock formation. Hence the costs of providing a given quantity of water vary from well to well. In the absence of hydro-geological knowledge the likelihood of striking water remains highly uncertain. Hence there is a considerable risk of failure and waste of investment in the case of a well digging programme.

It was noted in a survey carried out in 1967 in Ahmednagar district to study the utilization of long term finance for new wells that of the total loans disbursed for the construction of wells only 33 per cent proved to be productive. About 19 per cent of the investment was wasted due to the failure to strike water, 23 per cent of the investment did not prove fruitful as the work remained incomplete mainly due to the inadequacy of financial resources and 20 per cent of the loan amount was used for other purposes (Kadam, 1968, p. 123). The Land Development Bank which financed about 3000 wells per year in Ahmednagar district, found that 20 per cent of the wells were completely dry and in 60 per cent of the wells the yield was poor (Lal, 1972, p. 110). On this evidence, the probability of a viable well can, at best, be put around 30 per cent in the absence of scientific hydrogeological surveys. Thus even though huge investments have gone into the well digging programmes and a large number of new wells are being added, their contribution to agricultural development remains uncertain.

The investment for minor irrigation viz. well irrigation and lift irrigation including the programme of energization of wells, the investment for mechanization of agriculture viz. use of tractors and accessories, investment in soil conservation, and other agricultural development, land improvement programmes, investment in the completed major and medium irrigation projects for the period 1956-57 to 1972-73 valued at 1956-57 prices came to about Rs. 600 crore.

#### *Agricultural Production*

An upward trend in the agricultural production and particularly some stabilization of agricultural production would be expected as a result of the sizable investment made for agricultural development. If the data relating to net income from agriculture and allied activities and trends in the production of major crops are examined, the first noteworthy fact is the violent year to year fluctuations in the production of different crops and the large year to year variations in the total agricultural income (Table 2.7). The net agricultural income reached a peak of Rs. 664.2 crore (at 1960-61 prices) in the year 1960-61. The net agricultural income at 1960-61 prices was around Rs. 620 crore in the years 1963-64, 1964-65; around Rs. 600 crore in 1958-59, 1962-63, 1968-69; it was as low as Rs. 500 crore in the drought year 1965-66 and an all time record low income of Rs. 394 crore was noted in 1972-73.

During the 'fifties some increase in the production was noted in the case of all the major crops except pulses. The growth in the production was partly due to the increase in the area under cultivation. The marked growth in the production of sugarcane from about 6 lakh tonnes in 1951-52 to about 16 lakh tonnes (in terms of gur) in 1969-70 was largely because of the expansion in the area under sugarcane

Table 2.7 : NET STATE DOMESTIC PRODUCT ORIGINATING FROM AGRICULTURE, ANIMAL HUSBANDRY, FORESTRY AND LOGGING AND FISHING.

(Rupees crore)

Year	Net State domestic product from Agriculture etc. at current prices	Per cent share in State Income	Net State domestic product from Agriculture etc. at 1960-61 Prices
1955-56	331.6	33.1	448.1
1956-57	440.7	38.1	523.3
1957-58	457.8	37.5	528.0
1958-59	546.0	40.2	604.6
1959-60	521.9	38.8	557.5
1960-61	664.2	41.6	664.2
1961-62	618.4	37.5	598.7
1962-63	655.6	36.2	606.6
1963-64	749.4	36.8	618.8
1964-65	841.4	37.1	617.6
1965-66	771.1	32.7	498.2
1966-67	929.1	33.7	542.0
1967-68	1083.4	34.6	592.8
1968-69	1086.9	32.7	600.5
1969-70	1160.0	31.6	592.6
1970-71	1101.8	28.4	562.6
1971-72	1074.1	26.2	520.9
1972-73	988.4	22.7	394.3
1973-74	1870.3	32.5	635.4

Source : Maharashtra : An Economic Review, 1964-65, 1974-75, & Economic Survey of Maharashtra, 1978-79, 1980-81.

from about 91 thousand hectares in 1951-52 to 200 thousand hectares in 1969-70. In the case of wheat also the increase in the area cultivated was an important contributory factor. Increase in the productivity was noted in areas where there was a significant shift from non-irrigated to irrigated wheat cultivation. For all the crops taken together the annual compound growth rate for the period 1952-53 to 1961-62 worked out to 3.18 per cent for production, the corresponding growth rate for the area sown came to .48 per cent. In the following period viz. 1961-1973, wide fluctuations in the production were noted for all the crops barring sugarcane. The production was considerably below the normal in the years 1965-66, 1970-71, 1971-72 and nearly half the normal in the year 1972-73. A secular trend could not be fitted because of the wide year to year fluctuations in the production. The general trend, however, was downward for the period 1961-62 to 1971-72 for all the crops except bajra and sugarcane. In the case of sugarcane the increase is again due to the expansion of the area under sugarcane. In the case of wheat the introduction of improved and high yielding varieties, extension of irrigation and fertilizer application seem to be the important factors resulting in some increase in the per hectare yield (Rajpurohit, 1972, pp. 57-59). The performance of jowar, the major cereal crop that accounts for about 55 per cent of the cereal production in the State has been quite poor despite the introduction and spread of the high yielding varieties of jowar. During the period 1956-57 to 1969-70 negligible increase in the level of jowar production and productivity was recorded. During the early phase of green revolution i.e. the period 1964-65 to 1969-70 the annual compound growth rate was negative (-0.4 per cent for productivity and -1.64 per cent in the case of production). In the case of hybrid jowar, the year to year variability in the yields did not appear to be significantly lower as compared to the fluctuations noted in the case of local varieties. Even if the average yields of hybrid jowar are higher, it demands higher initial expenditure, the returns on which remain uncertain. The relatively poor yield of fodder, also acts as a deterrent to the acceptance of the hybrid variety. In addition, the water requirement for prophylactic measure makes it difficult to take to the cultivation of hybrid jowar in the dry tracts. If hybrid jowar is to be sown in the rabi season, it is necessary to give a few waterings; since only about 8 per cent of the rabi jowar receives irrigation the spread of hybrid variety is necessarily limited. In some areas, hybrid jowar could not compete with the local varieties even on the irrigated lands because of the high susceptibility to pests and diseases (Muranjan, II, 1972, pp. 46-49).

If all the crops are taken together, some decline, both in the productivity and in the total production is noted for the State as a whole during the 'sixties. The annual compound growth rate for the period 1961-1970 (omitting the drought year 1965-66) came .05 for area under crops, it was -.07 for agricultural production and -.12 in the case of

productivity (Khare, 1979, p.269). In the early 'seventies there was a marked decline in the production for three successive years viz. 1970-71, 1971-72, 1972-73 when drought conditions occurred in different parts of the State. A clear trend of increase in the agricultural production is not emerging and the wide year-to-year fluctuations in the levels of production persist. With a meagre development of irrigation facilities in the State and the absence of scientific approach in the utilization of the water resources harnessed, the agriculture in Maharashtra remains largely at the mercy of the vagaries of monsoon.

*Irrigated Agriculture* - The benefits of irrigation in Maharashtra are enjoyed mainly by one single crop, viz., sugarcane. The cultivation of sugarcane in the State is concentrated in some 24 talukas of the State, that includes eight talukas from Kolhapur district, five talukas from Ahmednagar district, three each from Nasik and Sangli districts, two each from Poona and Satara districts and one from Solapur district. These 24 talukas together account for 9.4 per cent of the gross cropped area in the State but claim as much as 66 per cent of the area under sugarcane in the State. High concentration of irrigation facility, mechanical lifts and tractors is noted in these talukas (Table 2.8). The percentage share of these talukas in the area under sugarcane in 1970 was nearly of the same order as noted in 1956-57. The new area added is, thus, largely a proportionate extension of the sugarcane areas already established by the 'fifties. The shares of Ahmednagar (24 per cent), Kolhapur (20 per cent), Poona (8 per cent), Satara, Nasik and Solapur (about 6 per cent each) districts remained about the same. Only in the case of Sangli district there were substantial additions to the area under sugarcane during the last decade; consequently the proportionate share of Sangli district in the total sugarcane area in the State increased from 4 per cent in 1956-57 to 9.4 per cent by 1968-69.

Even within this group of talukas a high concentration is noted in 8 talukas which together account for only 2 per cent of the gross cropped area of the State. Karveer, Hatkanangale, Radhanagari, Panhala and Shirol talukas from Kolhapur district which do not fall within the drought prone zone and three talukas viz. Shrirampur, Kopargaon and Rahuri from Ahmednagar district that were provided with protective irrigation facility in the early decades of this century together account for one third of the sugarcane area in the State. In 1972 about 30 per cent of the tractors in the State were located in these eight talukas. Thus, the investment in irrigation and other agricultural development is largely concentrated in a limited area of the State and the benefits of the investments made during the Plan period are mainly enjoyed by the sugarcane growers. The agricultural situation has not changed significantly during the last two decades over the vast stretches of the rural Maharashtra. Hence the widespread drought of 1972 created a critical situation in the State.

Table 2.8 : THE SHARE OF SELECTED DISTRICTS AND TALUKAS IN THE STATE IN GROSS CROPPED AREA, GROSS IRRIGATED AREA, AREA UNDER SUGARCANE AND IN OIL-ENGINE, ELECTRIC PUMPSETS AND TRACTORS.

District	Per cent share in the State in											
	Gross cropped area		Gross irrigated area		Area under Sugarcane				No. of oil engines & electric pumpsets		No. of Tractors	
	1956-57		1968-69		1956-57		1968-69		1968-69		1968-69	
	Dist- Total	Sele- cted Taluk- kas	Dist- Total	Sele- cted Taluk- kas	Dist- Total	Sele- cted Taluk- kas	Dist- Total	Sele- cted Taluk- kas	Dist- Total	Sele- cted Taluk- kas	Dist- Total	Sele- cted Talukas
Kolhapur <sup>1</sup>	2.1	1.6	3.3	2.9	21.8	19.0	20.0	17.7	5.5	3.0	15.4	15.1
Ahmednagar <sup>2</sup>	6.8	2.4	11.1	6.4	26.2	24.7	23.5	21.5	13.7	9.8	16.8	15.2
Sangli <sup>3</sup>	3.4	1.2	4.2	2.1	3.9	2.8	9.4	7.7	7.6	5.2	7.6	6.4
Poona <sup>4</sup>	5.6	1.1	8.0	4.2	8.3	6.2	8.6	6.4	5.6	2.1	7.4	4.7
Nasik <sup>5</sup>	5.1	1.6	6.6	3.3	7.8	4.5	6.4	4.5	9.6	4.6	8.0	5.0
Satara <sup>6</sup>	3.8	0.9	6.8	3.0	5.5	4.7	6.3	4.9	3.7	1.6	5.0	3.9
Aurangabad	7.2	-	6.1	-	5.1	-	5.5	-	6.8	-	4.3	-
Osmanabad	5.8	-	5.6	-	3.7	-	4.2	-	6.4	-	2.0	-
Solapur <sup>7</sup>	6.8	0.6	9.0	2.3	7.7	5.5	6.4	3.5	6.7	1.2	3.3	2.1
Total	46.6	9.4	60.7	24.2	90.0	67.4	90.3	66.2	65.6	27.5	69.8	52.4

Note : The selected Talukas from the respective districts are as follows:

- |   |                              |
|---|------------------------------|
| 1. Karveer, Hatkanangale, Radhanagari, Panhala, Shirol, Kagal, Gadhinglaj, Bhudergad. | 4. Baramati, Indapur.        |
| 2. Shrirampur, Kopergaon, Rahuri, Sangamner, Newase.                                  | 5. Niphad, Malegaon, Baglan. |
| 3. Tasgaon, Walwa, Miraj.   | 6. Phaltan, Karad.           |
|   | 7. Malshiras.                |

## CHAPTER III

### THE PROBLEMS OF IRRIGATION IN MAHARASHTRA

The low level of the total rainfall, its extremely uneven and uncertain distribution in the given season and the large variability between years, the total rainfall dropping to as low a level as 125 mm have kept the agriculture in the Deccan extremely vulnerable — a gamble in rain. The incidence of drought and famine has been consequently quite heavy; thus between 1800 and 1900 the number of drought years in Poona, Solapur and Ahmednagar districts were 15, 11, and 10 respectively. The cultivators get ruined during the drought years. This meant a continuous deterioration of the agriculture and the cultivator. For the British rule this had two implications — first the land revenue, an important source of income was adversely affected during the drought years, as certain revenue relief had to be granted to the cultivators; in addition the drought conditions called for some expenditure on famine relief and also involved indirect loss in the form of loss of revenue from excise, customs, stamp, salt duty, etc. Secondly, the supply of industrial raw materials and the demand for the British manufactured goods oscillated with the vagaries of monsoon. A need for a remedy was felt in the closing decades of the last century. The famines of 1896-97 and 1899-1900 highlighted the urgency to extend irrigation works as a protective measure against famine. The Indian Famine Commission Report of 1901 reiterated the views of the Famine Commission of 1898 as regards the need to give priority to the irrigation works and endorsed the policy change which would "place irrigation works in the place that protective railways have hitherto occupied in the Famine Insurance Programme" (IFCR, 1901, p. 112).

The Government of India appointed the First Irrigation Commission in 1901. The Commission took into consideration the factors like the estimated total cost of famine relief works in the tract in the preceding 25 years, population of the tract and concluded that the Government should be prepared to incur an expenditure equal to three times the future annual cost of famine relief and remissions of revenue for preventing famines in the future. It was contended that the expenditure which the Government may legitimately incur on famine prevention cannot be limited by a consideration of the reduction in the future cost of the famine to the State; that a much higher scale of expenditure may be justified, for the sake of saving the inhabitants of insecure tracts from all the losses and demoralization and miseries of famine. The Commission opined that they did not think that the works will prove to be remunerative in a financial sense or they can be expected to return more than two per cent on the capital cost. The major public works recommended by the Commission falling in the present Maharashtra State were (1) Chankapur storage on Girna (2) Maladevi storage on Pravara (3) Storage on

Gunjavani to feed Nira Right Bank Canals (4) Catchment areas of all the rivers originating in the Western Ghats to be investigated for locating as many storage reservoirs as possible to provide irrigation to the scarcity tracts (IICR, 1903, I, pp. 27-43).

In consequence of the recommendations made by the Indian Irrigation Commission, the Government of Bombay directed in 1902 Mr. H.F. Beale, the Superintending Engineer on special duty to make a hydrographical and hydrological survey in areas of Bombay Presidency where unfailing supply of water was available and where this water could be used for irrigation of lands liable to fluctuating rainfall and occasional droughts. After an extensive study of the area the Report of the Survey for Protective Irrigation Works in the Deccan was submitted to the Government. The major recommendations made in the Report are presented in Table 3.1.

#### *Development of Irrigation in Maharashtra*

Development of irrigation facility in Maharashtra poses complex problems because of the difficult terrain and small flow in rivers excepting the monsoon season. The traditional irrigation in Maharashtra, barring the special case of small tank irrigation in the districts of Chandrapur and Bhandara in Vidarbha, was almost entirely dependent on the construction of wells and small bunds across some stream or the lift schemes. The most notable *bandhara* schemes were in Nasik and Khandesh districts and co-operative lift irrigation schemes on rivers were fairly extensive in the Kolhapur district. There was no important scheme of canal irrigation in the pre-British times in Maharashtra.

The first large scale irrigation work in the then Bombay Province was the Krishna canal opened up in 1870. The canal took off from a diversion weir across the river and the irrigated area fluctuated from year to year with the available flow. It was apparent that unless provision for a reservoir is made stable canal irrigation cannot be assured in the Deccan. The first canals fed from the storage were the Mutha Canals taking off from the Khadakwasla reservoir in Haveli taluka of the Poona district. The work dates from 1875. The next work commissioned was the Bhatgar reservoir in the Satara district that fed the Nira left bank canal. This was opened up in 1885. Both these provided for irrigation in the drought-prone talukas of the Poona district. It was estimated that about 36300 hectares would receive irrigation from these canals.

Some parts of the Ahmednagar district — another drought-prone district of Maharashtra — came under canal irrigation through Pravara and Godavari canals in the second decade of this century. Irrigation on Pravara canal system commenced nominally in 1909-10 but water from the reservoir at Bhandardara dam became available only from 1919-20. The Godavari canals, fed through the Darna



Table 3.1 : IRRIGATION PROJECTS FEASIBLE ON THE GHAT-FED RIVERS OF THE BOMBAY PROVINCE

Name of the Project	Storage proposed (Mcft)	Gross area commanded (Hectares)	Maximum length of canal (Kms)	Area of crops which can be irrigated in normal years		Rough estimate of proposed works (Rs. lakh)	Expected net revenue on capital (Per cent)
				Hectares			
				Seasonal	Perennial		
1 Nira Left Bank Canal	35000	121608	161	22764	5059	310	5.15
Nira Right Bank Canal		283280	241	81949	12141		
2 Mutha Canal Extention	22000	137796	241	41157	10150	175	4.32
3 Girna	26000	174015	161	45527	10117	180	5.21
4 Mula Canal(Ahmednagar)	20000	121406	95	43706	8094	175	4.59
5 Kukari	20000	235021	257	109265	-	311	3.20
Ghod				9105	2023		
6 Bhima*	15000	68797	185	18211	8094	120	5.00
7 Mina	5000	30351	45	30351@	-	N.A.	-
8 Krishna (Dhom)	10000	20234	N.A.	N.A.	N.A.	N.A.	-
9 Koyna** (Helwak)	15000	60703	169	N.A.	N.A.	N.A.	-
10 Kadva (Palkhed)	9000	94697	129	54633@	-	196	2.06
	15000	-	-	91054@	-	-	-
11 Nasik Canal(Gangapur)	7000	9065	39	N.A.	N.A.	65	N.A.
12 Darna R.B.***Canal (Pimpalgaon Dokra)	35500	21448	74	21044@	-	36.5	4.30
13 Aundh (Mukne)	5000	-	-	-	-	N.A.	-
14 Tapti (Hatnur)	25000	80937	145	-	24281	N.A.	-
15 Tapti (Susti)****	1000	80937	161	-	-	N.A.	-

Notes: \* Bhama, Indrayani, Pauna, Mula - small storages of 5000 Mcft possible as productive works.

\*\* Storages on Warna (15000 Mcft), Kasari (10000 Mcft), Bhogava (6000 Mcft), Dudganga and Vedganga (10000 Mcft) possible.

\*\*\* Additional storage for Godavari canals.

\*\*\*\* Will be mainly supplied from river flow.

@ Possible irrigation: monsoon, rabi and eight months only at 15 acres per Mcft stored.

Position in 1974: Completed: 1,3,9,11; Under Construction: 2,4,5,6,7,8,10,14; Under Investigation: 12, 13.

Source: Report on the Surveys for Protective Irrigation Works in the Deccan, 1909, pp. 2-5.

reservoir, were commissioned in 1911-12 and supplied irrigation facility to parts of Ahmednagar and Nasik districts. Girna canals fed from the Chankapur reservoir opened up in 1909-10 supplied irrigation to some areas from the Nasik district. The Bhatghar reservoir on Nira was later enlarged and Nira right bank canal to supply water to some drought-prone areas from Satara and Solapur districts was completed during the early 'twenties.

In the Vidarbha region, irrigation on the Ramtek, Ghorajheri, Asola-Mendha and Naleshwar tanks was started in 1909, 1910, 1911, 1919 respectively. No major irrigation work was taken up in the first half of this century in the Marathwada region which formed the part of the Hyderabad State.

In 1920-21 about 6 per cent of the cultivated area in the Deccan received irrigation, about 60 per cent of this was provided through well irrigation and 30 per cent through the new canal works. The opening of new irrigation works added an area to the extent of 50 per cent to the area receiving irrigation around 1900. All the irrigation projects executed in the Deccan involved storage in the heavy precipitation area with utilization in areas receiving scanty rainfall. These provided relief to an area of over one lakh hectares from the drought-prone areas of the districts of Nasik, Ahmednagar, Poona, Satara and Solapur. The area irrigated by canals formed about three per cent of the cultivated area in these five districts.

The concern for the extension of irrigation projects shown at the turn of the century, gradually slackened and no major work was taken up after 1925, till after the independence.

Actually the Government became more and more concerned over the financial results of the irrigation project, particularly when with the depression of the '30s the revenues from the irrigation works showed a declining trend. In August 1931 the Government appointed a Committee to consider and report as to how the financial aspect of the irrigation works in the Deccan can be improved. The Committee in its report (BDCC, 1932, pp. 6-7) stated that the return on capital (about 8 crore) worked to about 1.33 per cent in 1929-30. The area irrigated was about 65 thousand hectares of which about 11,000 hectares were under sugarcane. The revenue receipts from the sugarcane crop accounted for about 50 per cent of the total revenue. In view of the fact that (1) there was not enough demand for seasonal irrigation (2) there would be a need to increase the capacity of the canal if more water is to be used for seasonal irrigation (3) the sugarcane was a high revenue yielding crop, the Committee recommended increase in the sugarcane area.

Since gur did not have an expanding market and faced severe price fluctuations, whereas there was a tremendous

potential for the production of sugar in view of the vast internal market the Committee recommended establishment of sugar factories in the canal command area (BDCC, 1932, pp. 14-20). The factories were encouraged to establish large sugarcane farms by taking over private lands on long leases. The interest that the Government showed quickly bore fruit and within a span of six years six new sugar factories were erected in the Deccan whereas in 1931 only one sugar factory was in operation. By 1936-37 the area under sugarcane under the major irrigation works increased to about 23,000 hectares.

The protective purpose of irrigation programmes i.e. the aim to protect and develop food and fodder supplies with the object of minimizing the intensity, extent and costs of famine, receded into background. The productive aspect of the irrigation works came to the fore and this meant provision of intensive irrigation for a valuable crop like sugarcane grown in limited areas. Since the development of irrigation received little attention after the 'twenties, many of the irrigation project proposals included in the Beale Report of 1909 that were in an advanced stage of preparation remained shelved.

#### *Irrigation Schemes in the First Two Plans*

The scheme for a storage on the Godavari River near Gangapur was under investigation in 1907, to supplement the existing supplies on the Godavari canals (Beale, 1909, p.23) The Gangapur project was sanctioned by the Government of Bombay in 1947 for constructing a composite dam with a storage capacity of 5500 mcft. With a view to reducing the cost, feasibility of an earthen dam was investigated and an earthen dam was considered feasible. The whole project was, therefore, recast in 1948 and the work on the project began in 1949. It was contemplated to increase the storage to 7200 mcft. in Stage II. The ultimate irrigation potential was estimated to be 23260 hectares. The Stage I of the project was completed in 1961 and the Stage II in 1969.

The Second Five Year Plan included five major irrigation projects viz. Vir dam, Girna project, Purna project, Mula project and the Khadakwasla project.

A storage dam at Bhatghar with a capacity of 5300 mcft. supplying water to the Nira Left Bank Canal was constructed in 1885. For a full development of the Nira valley, a project was prepared in 1922 which included construction of a new Bhatghar dam, construction of a new Vir dam, construction of the Nira Right Bank Canal and remodelling of the old Nira Left Bank Canal. The new Bhatghar dam was completed in 1927, with the lake capacity increased to 25000 mcft. and the work on the canals was also completed. After the construction of the canal the prospects of irrigation did not appear very bright and in consequence the full storage contemplated by raising the Vir dam was not provided. The

Nira Right Bank Canal was constructed for a much larger discharge than it was possible to obtain from the existing works, so that with the increase in demand for water for sugarcane cultivation, interest in the scheme of construction of the new Vir dam revived during the 'forties. The new dam was designed with a capacity of 9400 mcft. and the irrigable area was 16,110 hectares. The work was started in 1956 and was completed in 1966-67.

The Girna project with a storage on Girna river in Nasik District was to benefit areas from five talukas of Jalgaon district. The storage was of 10600 mcft. capacity. The work was started during 1956-1958 and was completed in 1969. The irrigable command is 57210 hectares.

The work on Purna project begun in 1957 was completed in 1967-68. Area of about 61510 hectares from Parbhani and Nanded districts - the area of assured rainfall - is to receive irrigation under the project.

The interest in the Ghod river project was revived after the widespread scarcity conditions experienced in the Deccan in 1952-53. The scheme of integrated development of Kukadi, Ghod and Mina river water resources was contemplated in 1909 (Beale, 1909, pp. 26-29) to serve the scarcity areas of Ahmednagar and Solapur districts. In 1954 it was decided to take a scheme of a weir and a canal to utilize the waters of Ghod river. Later a decision to provide a dam with a storage of 7638 mcft. was taken to provide irrigation to 17 and 12 villages from Shrigonda and Karjat talukas of Ahmednagar district and 14 villages from Sirur taluka of Poona district. The total area to receive irrigation was 24600 hectares. The work was started in 1954 and was completed in 1966.

The work on Mula project to provide irrigation to some 72080 hectares in Ahmednagar district was begun in 1957. The work was hampered due to foundation difficulties which greatly reduced its progress. By 1975 irrigation potential to the extent of about 54 thousand hectares has been created. The work is expected to be completed by 1979.

#### *The Khadakwasla Project*

The Khadakwasla project had a chequered history and is therefore considered here in some details. A small storage (about 4000 mcft.) was constructed at Khadakwasla (1875) on river Mutha to provide for protective irrigation and to meet the requirements of Poona City. To augment the water supply for irrigation, a new project was prepared and submitted to the Government of India in 1907. The project visualized construction of two reservoirs on the tributaries of Mutha, at Panshet and Warasgaon respectively. The scheme was later reconsidered and the 1909 Beale report (Beale, 1909, pp. 33-34) strongly recommended a large reservoir at Khadakwasla. It was considered very important to use the whole of the water available from streams of

the Bombay Ghats and Mutha River was one of the best catchment areas on the Western Ghats, so situated that the waters could be delivered to the famine districts in the east of Poona. Since the project first proposed provided for an additional storage of 4666 mcft., making a total storage of 8621 mcft. only while the reliable water supply of Mutha was much larger, it was proposed to build a higher dam at the site of the existing dam in the place of two reservoirs. The maximum height of the dam was to be 48 metres above bed level providing a storage of 22000 mcft. capacity. The submersion involved was put at 1700 hectares only, while the two reservoirs involved a submergence of 1300 hectares for an additional storage of 4666 mcft. Further the land submerged was mainly on the hill sides and comparatively poor, whilst the two reservoirs covered the rich rice-fields laying at the bottom of the valley. The direct losses from the lake by evaporation were also likely to be much less in the case of a deep lake than in the case of the shallow ones. A new masonry dam at Khadakwasla was, therefore, strongly favoured. The right bank canal was to be extended up to 254 kms. The water available for issue viz. 20500 mcft. was considered sufficient to irrigate every hectare of area commanded if cereal crops were grown. The irrigable command was put at 138,000 hectares. If sugarcane was to be grown 10,000 hectares could come under sugarcane and the total area irrigable was put at 40,000 hectares.

The project was considered to be the most efficient as a famine protective work and an early approval and sanction was requested in 1909. The estimated cost of the entire project was about Rs. 180 lakh. Before the work on the project could commence, the first world war intervened and the proposal was shelved for want of funds. In 1927, Evershed re-examined the project and strongly recommended an additional storage at Khadakwasla; the project report was submitted in 1932; the proposals contained in the 1932 project report came up for consideration off and on between 1932 and 1943. The project found a prominent place in the post-war reconstruction plan of Bombay Province drawn in 1943.

In the early 'fifties three proposals (i) to build a new dam on the downstream side of the existing Khadakwasla dam with a capacity of 15000 mcft. (ii) to raise the height of the existing dam and (iii) two masonry dams at Panshet and Warasgaon respectively were under consideration. In 1955, the proposal for the construction of a new masonry dam at Khadakwasla was favoured. In the meantime a member of the Central Water and Power Commission recommended construction of two earthen dams instead. It was expected that this would effect a saving of about 1 crore (the estimated cost of a new dam at Khadakwasla was Rs. 7 crore). The proposal for two earthen dams viz. Panshet dam with a storage of 7543 mcft. at an estimated cost of Rs. 275 lakh and Warasgaon dam with a capacity of 7555 mcft. and the extension of canal up to 161 kms. was finally accepted.

Subsequently it was decided to increase the capacity of Panshet reservoir to 10,000 mcft.

The work on the Panshet dam was started in 1957 and it was to be completed in five working seasons i.e. by June 1962. The total quantity of earth-work involved was 94 mcft. The total quantity of earth-work completed in 1957-58 was 6.94 mcft. and in the following two seasons about 43 mcft. earth-work was completed. The work was speeded up in the fourth season with a plan to complete the project by 1961 instead of 1962. By April 1961, the earth-work and the appurtenance work was somehow executed with a great haste and a few vital items were still to be completed. The work of the approach bridge, the hoisting arrangement, the installation of emergency gates, the work of pitching on the up-stream side were incomplete by the time the rains set in, in the second week of June 1961. The lake filled up rapidly in about three weeks. The lack of hoisting arrangements meant that the service gates could not be opened. The lake got overfilled, water overtopped the earthen dam and the dam collapsed on 12 July 1961. Half the length of the embankment i.e. about 360 metre portion was swept away and the rest developed huge cracks. The conduit arch was uprooted and the other appurtenance structures were destroyed. The collapse of the dam led to a serious disaster due to the torrential flooding of the Poona City, involving an estimated loss of Rs. 17.5 crore (Brahme, 1967, pp. 44-46).

It was now necessary to rebuild the Panshet dam and repair the old Khadakwasla dam which breached due to heavy floods caused by the collapse of the Panshet dam. The revised project included two storages viz. one at Panshet of 8600 mcft. capacity and the other at Warasgaon of 10700 mcft. capacity, strengthening of Khadakwasla dam and extension of canal up to 161 kms. The estimated cost was Rs.32.16 crore in 1973. About 38880 hectares were to get irrigation by the project. By 1973-74 major part of the work on the Panshet dam and the Khadakwasla dam was completed and the work on Warasgaon dam was started.

The collapse of the Panshet dam resulted in the loss of irrigation from the old Khadakwasla storage. The estimated loss to irrigated agriculture on this account for a period of twelve years amounted to about Rs. 6 crore. In addition the delay by over ten years in the irrigation benefit to be received from the Panshet reservoir meant substantial loss to the agriculture which could be estimated at Rs. 16 crore. The total cost of the project increased by about Rs. 25 crore because of the subsequent modifications in the design and the delay in construction by more than ten years during which the construction costs mounted up substantially. Thus the error of advancing the work plan by one year involved a delay of irrigation water supply at least by ten years, inflicted tremendous hardship on the citizens of Poona affected by the flood and imposed a cost of about Rs. 64 crore on the economy.

*Expert Committees on Problems of Scarcity and Irrigation*

In December 1958 the State Government appointed a Committee to enquire into the conditions in the scarcity frequented areas of the State with a view to assessing (a) preventive measures against famine and scarcity (b) policy in regard to taking up irrigation and other productive works in these areas. The Committee emphasized the need of considering the problem of development of scarcity areas as an integral part of the development plans and its implementation in a phased manner. The Committee suggested that high priority be accorded to major and medium schemes that would benefit the scarcity areas. It was recommended that the major irrigation schemes be combined with well and lift irrigation schemes to spread the water over as large an area as possible. The Committee suggested that well irrigation may be resorted to under conditions where irrigation by flood cannot be provided, because of the fact that well irrigation is a relatively costly mode of irrigation and because of the considerable risk and uncertainty involved in respect to the viability of a well (MSSA, I, 1960, pp. 19-21).

In 1960, the Maharashtra State Irrigation Commission was appointed by the Government to give comprehensive consideration to the problems of irrigation in the State. The Irrigation Commission estimated that excluding the Konkan districts for which master plan was not completed, the total area in the State which could be brought under irrigation was about 38.8 lakh hectares. This estimate was based on investigations carried out for harnessing 75 per cent dependable flows (MSIC, 1962, pp. 31-57) (Table 3.2).

The area irrigated from surface sources which was 2.1 per cent in 1950 was expected to increase to about 5.4 per cent when the schemes started in the First and Second Plans were implemented. These were expected to be completed by 1965 which meant that during the period from 1951 to 1965 on an average 0.2 per cent of the cultivated area would be added to the area under irrigation. If the work was to proceed at this rate, the Commission feared, it will take 88 years after 1965 to achieve full exploitation of the surface water resources. The Commission pointed out, "We consider that it is both imperative and practicable to achieve the Stage of full exploitation of the resources by 1980." It was also recommended that the programme of exploiting surface resources should not be considered independently of the schemes intended to conserve and utilize underground water resources which included schemes of construction of wells, contour bunding and terracing. The total cost of the schemes for conservation and utilization of water resources during the period 1961-1980 was estimated; the total cost came to Rs. 1395 crore (see page 38).

Table 3.2 : ESTIMATES OF IRRIGATION POTENTIAL BY SURFACE SOURCES IN MAHARASHTRA PREPARED BY MAHARASHTRA STATE IRRIGATION COMMISSION

Name of the basin	Surface water re-sources* TMcft	Water resources used up to 1951 TMcft	Irrigated area ('000 Hectares)	Utilization proposed under schemes in I, II, III plans			Total culturable area ('000 Hectares)	Irrigable command ('000 Hectares)	Per cent irri-gable
				Irrigation TMcft	Power TMcft	Irrigable Area ('000 Hectares)			
Krishna	769	15.0	32.4	57.2	80.1	113.3	1615	415	25.7
Bhima	310	48.5	101.2	104.2	-	279.2	3941	753	19.1
Godavari	403	30.0	60.7	152.8	-	323.8	5965	958	16.0
Wainganga	720	40.0	202.3	68.2	12.5	210.4	4613	1220	26.4
Tapi	229	14.0	28.3	81.7	-	242.8	3352	523 <sup>b</sup>	15.6
West flowing rivers	1500	13.0	4.0	7.0	8.0	20.2	1745	270 <sup>b</sup>	15.4
<b>Total</b>	<b>3931<sup>@</sup></b>	<b>160.5<sup>a</sup></b>	<b>428.9</b>	<b>471.1</b>	<b>100.6</b>	<b>1189.7</b>	<b>21231<sup>+</sup></b>	<b>4139<sup>+</sup></b>	<b>20.4</b>

Notes : \* Estimated water resources at 75 per cent dependability.

@ In the case of West flowing rivers, because of the ruggedness of terrain and the steep gradient substantial part of the water available cannot be harnessed. It is estimated that about 14 per cent of the total flow or 210 Tmcft can be utilized. The total utilizable surface water resources for the State come to 2640 Tmcft.

a The total water resources used including those for power generation (viz. 40.8 Tmcft in Bhima basin) came to 201.3 Tmcft.

b Of this 110 thousand hectares comes from Krishna by diversion of some of its water westwards.

+ Narmada basin which has 50,000 hectares culturable area and 4000 hectares irrigable command is not included.

Source : Maharashtra State Irrigation Commission, Report, 1962, p. 38.



## IRRIGATION DEVELOPMENT PROGRAMME (MAHARASHTRA)

Item	Estimated Cost Rs. Crore
Flow irrigation works including wells in the culturable commands	1130
Wells outside command areas	50
Contour bunding	130
Terracing	25
Other items	60
<b>Total</b>	<b>1395</b>

Source : Maharashtra State Irrigation Commission, Report, 1962, p.57.

The report emphasized, "In our opinion it is absolutely necessary to complete the work of fully exploiting the irrigation potential of the State by 1980. ... We have noted that the provision for all the works mentioned above in the Third Five Year Plan is only Rs. 105 crore which ... is wholly inadequate in relation to the enormous leeway we have to make up. ... The Plan provisions in each of the three Five Year Plans periods between 1965-1980 would have to be of the order of Rs. 300 to Rs. 500 crore if the irrigation development programme outlined by us is to be completed by 1980" (MSIC, 1962, p. 57.) With the completion of the programme it was expected that nearly 32 per cent of the cultivated land could be brought under irrigation. It was recommended that the water resources available should be stretched as far as possible to disperse the benefits of irrigation over as large an area in the State as feasible. It was also suggested that a combination of flow irrigation and lift irrigation should be made as far as possible. The recommendations of the Commission were accepted by the Government of Maharashtra in 1964.

The progress of the irrigation programme in the State, however, continued to be sluggish, despite the very strong recommendations of the Irrigation Commission for a massive acceleration of the irrigation programme. Five major irrigation projects were included in the Third Five Year Plan. Three of these five projects were located in the high rainfall regions of the State viz. Itiadh and Bagh in Bhandara district and Kal in Kolaba district. The other important projects taken up were Jayakwadi Stage I to benefit 2 talukas from Aurangabad district and four talukas from Parbhani district and the Bhima project to provide irrigation mainly to the scarcity-prone talukas of Solapur district. The work on the projects taken up during the earlier plans continued even during the annual plans. Four new major irrigation projects viz. Kukadi (Poona District), Krishna (Satara District), Upper Godawari (Nasik District) and Pench (Nagpur District) were taken up during the period of annual plans of 1967-1969.

*Execution of Irrigation Programme*

The various expert committees and commissions appointed during the last 75 years stressed over and over again the urgent need to harness the irrigation potential in the State at a fast rate and to ensure proper utilization of the impounded water resources. The Government was in principle all along in agreement with the recommendations. However, there always was a wide gap in the proposals made by the expert bodies and the execution of the various schemes. There has also been considerable delay in the anticipated date of completion of a project and the actual year of completion.

A variety of reasons are reported to be responsible for the delays in commencing the work on a project. Clearance of the projects by the Central Water and Power Commission or the Planning Commission is reported to be a major hurdle. The inter-State river water disputes had hampered the clearance of some projects. Major projects like Dudhaganga, Upper Penganga, Upper Wardha submitted in 1964, Kukdi submitted in 1965, Lendi and Pench submitted in 1967, Tiliari and Manjara submitted in 1968, Lower Penganga submitted in 1969, Upper Pravara, Lower Dudhana and Chaskaman submitted in 1970 were reported to be pending with the Centre till April 1973. So also about 45 medium projects were reportedly awaiting clearance.

As regards the ongoing works delays were reportedly experienced due to the problems in land acquisition,<sup>19</sup> the difficult supply situation with respect to steel and cement, inadequate number of heavy earth moving equipment, road rollers, problems of servicing the heavy machinery, site problems leading to alterations and modifications in the design, cost escalation and shortage of funds etc.

Even when the headworks are completed and the water impounded in the reservoir there is often a lag in the construction of irrigation canals. So also the completion of field channels, the land shaping and land levelling works and the drainage arrangements take considerable time. This in effect leads to a delay in the actual utilization of the water, even though the potential is created. The shift to irrigated agriculture from dry agriculture is fraught with many problems. Suitable cropping pattern has to be involved so that area under double cropping could be increased. The technical knowhow relating to the adoption of appropriate cropping pattern, seed varieties, application of fertilizers and pesticides to get full benefits of the irrigated agriculture has to reach the farmer. It is equally important to provide for adequate and timely finance to meet the increased input needs and also to ensure the supply of necessary inputs. The farmers' ability to incur higher initial expenditure and accept the risks and uncertainty involved has also be strengthened. The cultivation of irrigated crops calls for adequate arrangements for marketing, storage and transportation of the marketable surplus. In areas of assured rainfall, there is

a reluctance to shift to irrigated agriculture. The returns from irrigated agriculture have to be lucrative enough to promote a change over. All these factors have to be taken into account in promoting extension of irrigated agriculture, particularly in areas where surface irrigation is being newly introduced. Otherwise the area brought under irrigation falls considerably short of the irrigation potential created. It must also be noted that in many projects, more area is put under sugarcane crop than envisaged in the crop pattern given in the project report; consequently the water impounded gets utilized in the upper reaches and does not actually service the total irrigable command. The area irrigated in such cases is considerably less than the area anticipated to be irrigated by the project. For example, the Pravara canals were designed to cover a culturable area of about 63500 hectares while the area actually irrigated was only 24300 hectares. Similarly the Nira left bank canal irrigation is spread over some 29500 hectares in the upper reaches of the canal, leaving the remaining area at the tail end with little benefit of irrigation (MSIC, 1962, p. 47).

Information about the irrigation potential created and the actual irrigated area is presented in Table 3.3. By 1974, full utilization of the irrigation potential created was noted only in the case of the Vir dam project completed in 1966-67. For the Ghod project the percentage utilization was 50. In the case of Purna and Girna projects where the irrigable command lay in the assured rainfall region, the extent of utilization was 35 per cent and 23 per cent respectively. For the ongoing major irrigation projects where part of the irrigation potential was already created the percentage utilization was noted to be 36 in 1974.

The irrigation potential of the major irrigation projects completed, ongoing or just started is estimated to be 1615 thousand hectares. In 1974, the area irrigated under these projects came to 8 per cent of the ultimate potential that will be created on the completion of all these projects.

The ultimate irrigation potential of the major, medium and minor irrigation projects in the State is estimated to be about 4500 thousand hectares. By 1975, only about six per cent of the ultimate irrigable area by surface sources had actually come under irrigation, whereas the Irrigation Commission (1962) considered it feasible to achieve full exploitation of the surface water resources by 1980.

#### *Well Irrigation*

Well has been an ubiquitous source of irrigation in use since ancient times. The underground water resource potential varies considerably between the various tracts of the State. There are also considerable variations in the extent of groundwater resources exploited so far in the different regions of the State. There were substantial additions to the number of irrigation wells in the States during the last

Table 3.3 : IRRIGATION POTENTIAL CREATED AND FEASIBLE IN DIFFERENT REGIONS OF MAHARASHTRA

(Area in '000 hectares)

Region	Major and Medium Projects					Anticipated potential*		Ultimate potential feasible	
	Completed Projects			Continuing projects: ultimate potential	Proposed project: ultimate potential	Total for completed, continuing & proposed projects	by 1974		between 1974-1979
	Ultimate potential	Potential created by	Utilization in						
	'71-72	'71-72	'71-72						
Konkan	-	-	-	54.27	16.26	70.53	14.27	59.94	230.25
Khandesh & Nasik District	120.09	91.05	37.33	106.60	102.68	329.37	201.73	172.36	512.62
Western Maharashtra	174.21	117.21	66.82	601.49	112.74	888.44	479.36	397.90	1259.08
Marathwada	151.40	138.80	64.57	271.85	261.27	684.54	265.31	301.45	925.33
Vidharbha except Bhandara and Chandrapur districts	75.81	58.96	7.16	98.37	184.09	358.27	120.04	200.91	772.06
Chandrapur and Bhandara Districts	89.60	24.11	5.90	101.59	109.70	300.89	191.41	50.99	804.71
State	611.11	430.13	181.78	1234.17	786.74	2632.02	1272.20	1183.55	4504.05

\* Major, medium and minor projects

Source : Draft Out-line of the Fifth Five Year Plan (1974-79), 1973, pp. 108-109, 164-177.

15 year period. The additions were particularly numerous in the Marathwada region, Western Maharashtra and Khandesh districts. The average area irrigated by a well was about 1.3 hectares in 1971-72 in these regions while in the Konkan and Vidarbha region, nearly all the wells have less than one hectare of land under irrigation, the average area irrigated per well being around .5 hectare. For the State as a whole the average area irrigated per well works to about one hectare and this average has not changed over the last 15 years (Table 3.4).

There are considerable inter-district variations in the number of irrigation wells not in use, this number being particularly high in the districts of Nagpur, Wardha, Akola. A variety of reasons like inadequate water supply or failure of a well due to bad siting, non-completion of work, inadequate area under well, non-use of well in a season because of adequate rainfall, problems of litigation, etc. were noted in the study of unused wells conducted in Wardha district (IWDP, 1962, pp. 15-21). About 60 per cent of the total irrigated area in the State is under well irrigation (Table 3.5). Except for rice where tank is the major source of irrigation, and only 9 per cent of the irrigated area under rice receives well irrigation, the extent of area under well irrigation is around 60 per cent for the other major irrigated crops like rabi jowar, wheat and sugarcane. In the case of horticultural crops, vegetables, chillies and spices well irrigation is the main source of irrigation.

The potential for further utilization of the groundwater resources has been worked out by the Groundwater Surveys and Development Agency on the basis of the normal rainfall, putting average recharge at nine per cent of the total precipitation, adjustments being made for increase in the recharge due to surface irrigation, return from well irrigation, bunding, etc. The current annual withdrawal of the water for irrigation and for domestic purposes has been estimated and the balance which is not tapped is worked out. Assuming that about 50 per cent of the balance will be tapped and an annual average draft of 12 acre feet will be made per irrigation well, the number of new irrigation wells is worked out. The number comes to about 5 lakh wells for the State as a whole i.e. an addition by about 70 per cent to the existing number of wells in the State is considered feasible.

#### *Irrigation in Various Regions of the State*

On the eve of planning in 1950-51 the extent of irrigated area was very small in Konkan and Marathwada (2.0 and 2.5 per cent of the sown area respectively). The corresponding percentage was 1.2 in Vidarbha excluding Chandrapur and Bhandara districts. Well was the main source of irrigation in Marathwada and Vidarbha. Only in Chandrapur and Bhandara districts the extent of irrigation was 22 per cent, tanks being the major source of irrigation. In

Table 3.4 : IRRIGATION WELLS IN DIFFERENT DISTRICTS OF MAHARASHTRA

District	No. of irrigation wells in use		Percentage of wells not in use to total irrigation wells 1971-72	Average area irrigated per well (in hectares) 1971-72	Estimated no. of additional wells feasible 1971
	1956-57	1971-72			
Greater Bombay	386	386	11.87	0.52	-
Thana	6239	5904	5.28	0.73	30937
Kolaba	3684	3975	19.09	0.55	23793
Ratnagiri	11798	12931	20.71	0.32	37196
Nasik	47338	68691	5.08	0.84	14641
Dhulia	8694	22914	9.57	1.72	14201
Jalgaon	34689	42370	18.15	1.41	11075
BOMBAY DIVISION	112828	157171	11.38	1.07	131843
Ahmednagar	53532	72605	15.58	1.51	13034
Poona	38733	56003	8.40	0.84	19553
Satara	28083	37665	8.78	1.02	12851
Sangli	27747	41828	6.81	0.99	4294
Solapur	45858	53384	6.66	1.58	8619
Kolhapur	9309	14746	11.56	0.81	17533
POONA DIVISION	203262	276231	10.08	1.21	75884
Aurangabad	26009	68506	7.37	0.99	12369
Parbhani	10547	22406	12.69	0.64	19472
Bhir	26084	30602	6.07	1.00	14483
Nanded	5688*	10846	4.93	0.76	21219
Osmanabad	14714	32654	10.59	2.13	14174
AURANGABAD DIVISION	80234	165014	8.39	1.16	81717
Buldhana	12693	21162	29.64	0.71	11608
Akola	2872	8160	42.86	0.87	14915
Amravati	10109	19955	19.73	0.75	20751
Yeotmal	3588	9313	30.86	0.70	32396
Wardha	5725	9748	53.24	0.82	15160
Nagpur	18746	26453	49.28	0.79	21172
Bhandara	8410	10489	26.34	0.42	28717
Chandrapur	6399	8099	36.05	0.26	74101
NAGPUR DIVISION	68542	113379	37.91	0.70	218820
MAHARASHTRA STATE	464866	711795	15.99	1.08	508264

\* Refers to year 1957-58

Table 3.5 : IRRIGATED AREA IN DIFFERENT DISTRICTS OF MAHARASHTRA

District	Net irrigated area in '00 hectares			Total irrigated area in '00 hectares in 1971	
	by well (1956-57)	by well (1971-72)	by canal (1971-72)	Net irrigated area	Gross irrigat area
Greater Bombay	5	2	-	2	2
Thana	36	43	-	48	51
Kolaba	15	22	22	55	57
Ratnagiri	52	42	26	117	117
Nasik	222	577	226	806	1067
Dhulia	172	395	141	538	744
Jalgaon	245	596	176	774	1103
BOMBAY DIVISION	747	1677	593	2340	3141
Ahmednagar	697	1098	462	1560	1746
Poona	367	471	436	1008	1275
Satara	288	384	352	806	1057
Sangli	295	415	60	570	675
Solapur	728	845	239	1086	1425
Kolhapur	106	119	25	475	501
POONA DIVISION	2481	3332	1574	5505	6679
Aurangabad	372	681	69	765	1002
Parbhani	171	143	56	208	210
Bhir	223	305	49	462	539
Nanded	48*	82	50	158	184
Osmanabad	315	695	53	765	868
AURANGABAD DIVISION	1143	1906	277	2358	2803
Buldhana	67	151	12	164	205
Akola	27	71	2	75	75
Amravati	51	150	-	151	157
Yeotmal	21	65	5	74	85
Wardha	41	80	14	96	113
Nagpur	127	210	110	409	445
Bhandara	26	44	289	1393	1393
Chandrapur	11	21	189	1107	1120
NAGPUR DIVISION	371	792	621	3469	3593
MAHARASHTRA STATE	4742	7707	3065	13672	16216

\* Refers to year 1957-58

Khandesh and in Nasik district about 4 per cent of the cropped area received irrigation. In Western Maharashtra, which has an extensive belt of scarcity-prone areas, canal irrigation received attention in the late 19th and early 20th century and irrigated area covered about 9 per cent of the cultivated area in 1950-51. The irrigation is provided both through the surface and the ground water resources.

In the twenty year period between 1951 and 1971 the area under irrigation increased by 77 per cent for the State as a whole. The increase was very small in Konkan and Chandrapur-Bhandara districts - the high rainfall regions of paddy cultivation. In Marathwada a beginning of surface irrigation was made and major projects like Purna and Jaikwadi Stage I were completed and a number of medium and minor projects were also commissioned.

Well was the major source of increase in the extension of irrigated area, accounting for about 68 per cent of the increase in the irrigated area between 1951 and 1971 (Table 3.6). This was largely due to the increase in the number of dug wells. Nearly 2.5 lakh wells were added during the period 1956-1971. The increase in the number of energized wells also helped increase the area under irrigation to a certain extent. Extension of canal irrigation accounted for nearly 20 per cent of the increase in the irrigated area. The major increase was in Western Maharashtra, Marathwada and Khandesh-Nasik. There was some increase in the tank irrigation in Chandrapur-Bhandara districts and increase through lift irrigation was notable mainly in Kolhapur, Satara, and Sangli districts. The irrigated area formed about 12 per cent of total cultivated area in Western Maharashtra, 9 per cent in Khandesh, 5 per cent in Marathwada and it continued to be negligible in Konkan and Vidarbha.

#### *Crop Pattern in Irrigated Agriculture*

In 1951, about 60 per cent of the area receiving irrigation in the State was under foodgrains (Table 3.7). Rice was the major irrigated crop in Konkan and Chandrapur-Bhandara districts, wheat in Khandesh and jowar in Western Maharashtra. Among the other crops, chillies and spices accounted for about 10 per cent of the irrigated area in Khandesh and Vidarbha, and sugarcane covered 14 per cent the irrigated area in Western Maharashtra. The irrigated area under oilseeds and cotton was negligible (about one per cent) and it was less half a per cent in the case of fruits and vegetables.

In the following decade, certain changes were observed in the irrigated crop pattern in the State. By 1967-69 the share of sugarcane increased to about 12 per cent and that of fruit and vegetables to 5 per cent. The area under irrigated cotton increased from less than half a per cent to about 8.6 per cent in Vidarbha and 5.8 per cent in Khandesh. About 60 per cent of the irrigated area remained under foodgrains.

The extent of area under irrigated cultivation varies considerably between different crops. The sugarcane crop is fully irrigated. About 23 per cent of the rice crop receives irrigation. The percentage of irrigated wheat increased from 15 per cent in early 'fifties to 27 per cent by 1967-69; the major increase is recorded in Khandesh and



Table 3.6 : PROGRESS OF IRRIGATION IN MAHARASHTRA

Year	No. of wells for irrigation purposes	Well irrigated area in '00 hectares	Net irrigated area in '00 hectares	Index of irrigated area (1956-57 =100)			Intensity of cropping*	Per cent area irrigated @
				By canal	By well	Gross irrigated area		
1950-51	N.A.	3900	7868	84.4	82.3	85.5	114.3	5.4
1955-56	N.A.	4600	8808	98.9	97.0	96.7	115.4	5.4
1956-57	464866	4742	9143	100.0	100.0	100.0	115.0	5.6
1957-58	479258	4782	9386	104.1	100.9	103.1	115.5	5.8
1958-59	491618	5214	9649	105.2	110.0	104.8	114.2	5.9
1959-60	518869	5554	10178	107.5	117.1	111.4	115.1	6.2
1960-61	542417	5953	10722	107.8	125.6	116.0	113.8	6.5
1961-62	557377	6108	10812	107.0	128.8	117.3	114.1	6.5
1962-63	571634	6315	11257	112.9	133.2	121.5	113.5	6.7
1963-64	584122	6506	11502	110.9	137.2	124.9	114.2	6.8
1964-65	603672	6826	11906	109.9	144.0	129.7	114.6	7.1
1965-66	610678	7107	12063	110.3	149.9	132.0	115.1	7.3
1966-67	626757	6982	12172	107.9	147.3	134.4	116.1	7.4
1967-68	642469	7210	12751	123.7	152.1	140.4	115.8	7.7
1968-69	664514	7964	13745	122.2	168.0	148.0	113.3	8.0
1969-70	680545	8211	14312	138.3	173.2	154.3	113.4	8.4
1970-71	693643	7679	13469	127.5	161.8	149.3	116.6	8.5
1971-72	711795	7707	13672	135.8	162.6	154.2	118.6	9.0
1972-73	733016	7133	12762	114.2	150.5	139.0	114.5	8.6
1973-74	753293	8399	14717	132.3	177.1	168.0	120.1	9.1

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Notes: \*  $\text{Gross irrigated area/Net irrigated area} \times 100$   
 @  $\text{Gross irrigated area/Gross cropped area} \times 100$

Table 3.7 : CROP PATTERN IN IRRIGATED AGRICULTURE FOR DIFFERENT REGIONS OF MAHARASHTRA

Region	1951-53						
	Konkan	Khandesh and Nasik District	Western Maharashtra	Marathwada	Vidarbha except Bhandara and Chandrapur Districts	Bhandara and Chandrapur Districts	Maharashtra State
Per cent area irrigated to gross cropped area	1.98	4.02	8.67	2.54	1.20	22.02	5.34
Gross irrigated area in '00 hectares	160	996	4512	1098	436	2088	9290
Percentage of irrigated area under							
Total Food crops	60.17	86.10	88.86	92.61	98.84	99.98	91.48
Total cereals	26.67	43.48	54.39	55.60	30.57	96.33	61.20
Rice	23.13	7.36	4.37	2.54	20.78	96.15	26.20
Wheat	-	33.45	9.24	18.01	8.07	0.06	10.59
Jowar	-	1.24	32.69	28.08	1.34	-	19.39
Bajra	-	0.35	6.26	2.88	-	-	3.42
Total pulses	3.03	5.53	6.08	10.08	1.90	-	4.88
Sugarcane	1.26	8.74	14.25	8.17	3.15	0.87	9.19
Fruits and Vegetables	0.25	0.51	0.88	-	-	-	0.48
Chillies and Spices	3.29	9.84	3.04	2.27	10.81	-	3.36
Total non-food crops	39.83	13.90	11.14	7.39	1.16	0.02	8.52
Oil seeds	4.55	1.42	1.67	0.04	0.09	-	1.05
Cotton	-	0.12	1.48	1.01	0.28	-	0.86
Miscellaneous crops	25.67	18.00	10.22	16.49	52.41	2.78	12.37

(Contd.)

Table 3.7 : CROP PATTERN IN IRRIGATED AGRICULTURE FOR DIFFERENT REGIONS OF MAHARASHTRA (Contd...)

Region	1967-69						
	Konkan	Khandesh and Nasik District	Western Maharashtra	Marathwada	Vidarbha except Bhandara and Chandrapur Districts	Bhandara and Chandrapur Districts	Maharashtra State
Per cent area irrigated to gross cropped area	2.74	9.23	11.75	5.40	2.28	19.87	7.85
Gross irrigated area in '00 hectares	254	2377	6478	2728	925	2403	15165
Percentage of irrigated area under							
Total Food crops	72.19	87.63	90.13	92.72	91.01	99.97	91.52
Total cereals	30.23	46.07	53.71	59.52	45.09	96.51	59.43
Rice	27.50	5.92	4.50	3.65	15.64	95.43	20.04
Wheat	-	36.01	10.25	18.30	25.92	0.99	15.05
Jowar	-	0.54	31.83	33.31	2.91	0.05	19.87
Bajra	-	2.91	5.10	1.88	0.18	-	2.98
Total pulses	2.99	5.15	4.53	5.35	2.33	0.02	3.90
Sugarcane	1.54	5.93	20.53	10.59	2.84	0.30	11.86
Fruits and Vegetables	14.63	10.74	3.80	4.25	13.37	0.81	5.25
Chillies and Spices	7.03	7.55	3.86	7.78	12.40	1.49	5.34
Total non-food crops	27.81	12.37	9.87	7.28	8.99	0.03	8.48
Oil seeds	24.90	1.46	1.74	0.67	0.15	0.03	1.52
Cotton	-	5.84	4.70	4.35	8.55	-	4.22
Miscellaneous crops	15.76	12.19	3.70	5.23	14.98	0.84	5.74

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(Concluded)

Western Maharashtra. The area irrigated is quite small in the case of jowar (5 per cent), pulses (2.3 per cent) and oilseeds (1.3 per cent). Cultivation of irrigated cotton has increased in Western Maharashtra where about 52 per cent of the area under cotton receives irrigation. The corresponding proportion is less than 2 per cent in Vidarbha and Marathwada, the major cotton growing tracts of the State.

The area under different irrigated crops does not present a full picture of the utilization of irrigation water. The water requirements of different crops are highly divergent, varying from 7.8 acre inches for kharif jowar for two supplementary waterings to 176.8 acre inches in the case of sugarcane which needs 34 waterings during a one-year period (MSIC, 1962, pp. 348-49). If the utilization of water is taken into account it was observed that about 45 per cent of the irrigation water was utilized for sugarcane cultivation and 30 per cent for rice cultivation in the early 'fifties. Another 15 per cent was used for wheat, jowar and pulses. Crops like fruit, vegetables, cotton, oilseeds each claimed less than one per cent of the total water used for irrigation.

By early 'seventies, it is noted that of the additional water resources made available nearly 70 per cent was devoted for the cultivation of sugarcane and horticultural crops, about 10 per cent for cotton, groundnut and other cash crops and only 20 per cent for the cultivation of foodgrains, mainly wheat and jowar. As a result, the share of cereals and pulses in the total irrigated crops, declined from about 46 per cent in 1951 to 33 per cent in 1971, while that of sugarcane and horticultural crops, increased from 47 per cent to about 60 per cent in the same period. The additional water resources impounded are, thus, being mainly utilized for voracious water consuming crops notably sugarcane.

The use of irrigation water made available in the last two decades is examined at taluka level for the three scarcity-prone districts viz. Ahmednagar, Solapur and Poona. It is observed that in areas where the source of increase in the irrigation is mainly through wells which have a relatively dependable water supply as these are located in the canal command areas, the major increase is in the cultivation of sugarcane. There is little or no increase in the irrigated area under foodgrains. Talukas like Indapur, Baramati from Poona district and Shrirampur, Rahuri from Ahmednagar district, or Pandharpur from Solapur district are cases in point. In case the increase in irrigation is primarily due to the extension of canal irrigation increase in the area under sugarcane as well as the area under foodgrains is noted because of the restrictions on the cropping pattern in the canal command area. For example, in talukas like Sirur and Dhond from Poona district, Kopergaon and Shrigonda from Ahmednagar district, some

increase in the area under cereals is noted. For the three districts together the irrigated area increased from 3.1 lakh hectares to 4.3 lakh hectares between 1950-51 and 1969-70. The area under irrigated foodgrains increased from 2.0 lakh to 2.5 lakh hectares, and that under sugarcane recorded an increase from 0.32 lakh hectares to 0.84 lakh hectares. If the water utilized is considered the share of foodgrains declined from 35 per cent to 25 per cent, and that of sugarcane increased from about 40 per cent to nearly 60 per cent.

The emphasis on the protective purpose of the irrigation projects laid at the turn of the last century by the British for avoiding the loss of land revenue income and the famine expenditure shifted during the 'thirties to the consideration of the return on the capital invested in the irrigation projects. Cultivation of sugarcane was encouraged to improve the income from irrigation charges. After 1950 the distinction between the protective and productive purposes receded in importance. With the success of co-operative sugar factories the cultivation of sugarcane became very attractive as it provided stable and larger income compared to the income from other irrigated crops. The sugarcane crop became the choice crop in the use of irrigation water. Since the water requirement of sugarcane are very large, even though the area under sugarcane is not extensive (so also the number of cultivators who can grow sugarcane) the impounded water resources used for sugarcane cultivation are substantial. This in effect meant that the use of irrigation water got restricted to a limited area. The need of spreading the water impounded over as large an area as possible, particularly for providing protection to the food and fodder crops in the drought-prone areas did not receive proper attention in the utilization of the water resources tapped during the last two decades. The lapses in the irrigation development like the slow pace of harnessing the available water resources of the State and the lack of rational policy in the utilization of the water resources were brought to the forefront again by the acute scarcity conditions experienced in the Maharashtra State during the drought of 1972.

## CHAPTER IV THE IMPACT OF DROUGHT 1972

The drought of 1972 affected five States of India viz. Maharashtra, Rajasthan, Gujarat, Karnataka and Andhra Pradesh. The production of foodgrains for the country as a whole was lower by about 7 per cent as compared to the previous year's production. The foodgrains production in the country suffered a reduction by nearly 20 per cent during the drought of 1965-66. The year 1972 cannot be considered as a particularly bad year for the Indian agriculture as a whole. The drought conditions were, however, quite acute in the Maharashtra State. The production of foodgrains in 1972-73 was below that of 1968-69 by as much as 54 per cent. Reduction in the production of foodgrains was to the extent of about 80 per cent in Bhir, Solapur and Sangli districts, between 65 and 75 per cent in Aurangabad, Nasik, Ahmednagar, Nanded districts, between 55 and 65 per cent in Satara, Dhulia, Osmanabad, Akola districts, and the reduction was around 50 per cent in Poona, Thana, Parbhani, Buldhana and Bhandara districts (Table 4.1).

The present study was taken up with a view to evaluating the short-term effects of the drought conditions on the rural population of the Maharashtra State. For this purpose a survey of drought affected families from thirteen villages from Sirur taluka of Poona district was undertaken. The impact of drought was studied at the village level through a survey of 73 selected villages. These villages were selected from one of the affected talukas from each of the six most severely affected districts of the State. In addition information relating to the drought conditions available through the official sources as well as other studies was also used. On the basis of the available information the impact of drought is assessed in terms of (i) the loss of crops and livestock in the year 1972, (ii) the extent of compensation provided by the State Government through alternative employment on the scarcity relief works, (iii) the reduction in the level of incomes and (iv) the effective levels of living in the year 1972.

### *Loss of Crops*

There was a reduction in the total area sown in 1972 in some areas of the State because of the drought conditions. The gross cropped area was 170 lakh hectares in 1972-73 as against the normal hectarage of 194 lakh i.e. there was a reduction by about twelve per cent in the total area sown. (Table 4.2). There was no reduction in the area sown in the Vidarbha region. The reduction was marginal in the Bombay division while the extent of reduction was nearly 25 per cent in Western Maharashtra. A decrease in the hectarage to the extent of about 20 per cent was noted in the case of pulses and chillies and 30 per cent in the case of bajra. The corresponding percentages were 15 for wheat

Table 4.1 : SHORT-FALL IN THE RAINFALL AND PRODUCTION OF FOODGRAINS IN 1972 IN DIFFERENT DISTRICTS OF MAHARASHTRA

<i>District</i>	<i>Average normal rainfall (mm)</i>	<i>Rainfall in 1972 as percentage of average rainfall</i>	<i>Production of food-grains in 1968-69 in '00 tonnes</i>	<i>Production of food-grains in 1972-73 as percentage of 1968-69 foodgrains production</i>
Thana	2366.7	64.5	2265	49.3
Kolaba	3429.1	59.9	2249	77.9
Ratnagiri	3334.3	65.9	2120	84.6
Nasik	994.3	60.9	3523	25.8
Dhulia	713.5	67.8	2461	44.2
Jalgaon	741.0	69.3	3194	65.1
Ahmednagar	591.4	38.4	3432	33.7
Poona	1119.1	62.2	2485	53.4
Satara	1353.4	61.7	2356	37.4
Sangli	624.8	54.0	2152	17.8
Solapur	604.2	39.4	3924	16.9
Kolhaour	2165.8	54.1	1734	67.2
Aurangabad	705.8	43.4	3380	26.2
Parbhani	929.2	49.4	2791	49.1
Bhir	694.9	37.5	2768	15.2
Nanded	1022.1	49.5	2748	33.9
Osmanabad	736.4	46.2	3891	38.1
Buldhana	722.8	70.2	2781	47.1
Akola	859.7	86.0	2756	45.6
Amravati	763.4	86.5	1862	68.1
Yeotmal	1036.9	63.9	2355	70.6
Wardha	1085.0	64.9	1503	62.8
Nagpur	1008.6	59.4	2026	60.3
Bhandara	1508.0	61.6	3215	52.7
Chandrapur	1355.2	54.8	3585	63.4

Table : 4.2 : AREA UNDER MAJOR CROPS IN 1972 IN DIFFERENT REGIONS OF MAHARASHTRA IN RELATION TO 1968-69 POSITION

Region	Crop													
	Rice	Wheat	Jowar	Bajra	Other Cereals	Tur	Gram	Other Pulses	Ground nut	Other Oil-seeds	Cotton	Chillies	Sugar-cane	All crops
<i>Area under crop in 1972-73 as percentage of corresponding area in 1968-69</i>														
Konkan	100.0	-	80.0	-	79.4	83.3	73.7	72.2	100.0	55.6	-	68.8	80.0	86.4
Khandesh and Nasik District	112.9	71.6	91.5	92.0	98.1	92.3	65.1	82.6	102.0	72.9	96.0	113.2	124.4	90.6
Western Maharashtra	92.1	90.8	92.4	46.3	87.3	25.7	49.5	42.3	62.1	59.7	48.6	71.2	106.3	76.0
Marathwada	101.1	80.1	92.4	87.9	68.1	86.6	74.8	89.9	85.3	88.6	75.6	68.2	68.0	85.9
Vidarbha	101.8	92.8	92.8	116.3	93.5	105.0	107.4	98.5	147.0	105.1	103.4	92.8	100.0	100.4
Maharashtra State	100.3	84.6	92.5	70.3	85.9	81.6	73.0	82.0	88.1	95.7	93.6	82.0	102.1	87.7
Area under crop in 1972 in '00 Hectares	13317	7099	54425	14294	3954	5012	2590	13639	8172	3364	25432	1267	2055	169797

THE IMPACT OF DROUGHT 1972



and 12 for groundnut. The extent of reduction in the case of crops like jowar, cotton was less than ten per cent while there was no decrease in the area under rice and sugarcane; the former is grown in the region receiving heavy rainfall and the latter is a wholly irrigated crop.

There were considerable variations between different crops in the extent of the loss of crop sustained during 1972-73 (Table 4.3). The kharif crop was sown in June with the expectation of a normal rainfall, but with an almost total failure of the rains in the following months, the crops did not mature over large tracts of the State. The loss of production was the heaviest in the case of groundnut; nearly 70 per cent of the crop was lost. The total production in the case of bajra was 65 per cent and in the case of jowar and gram it was 60 per cent of the normal production. For wheat, rice and tur the extent of reduction was about 40 per cent, and it was about 23 per cent in the case of cotton. The loss of wheat and cotton crops was considerably more in the Marathwada region while in Khandesh and Western Maharashtra the extent of loss was relatively less. Wheat and cotton are cultivated under irrigated conditions to a significant extent in Khandesh and Western Maharashtra. There was not any significant reduction in the production of sugarcane.

The area under irrigation was not affected in the Bombay division or in the Vidarbha districts. There was a reduction to the extent of 10 per cent in the irrigated area in Western Maharashtra and 22 per cent in the Marathwada region. The Marathwada region is dependent mainly on well irrigation and the water supply from wells proved to be inadequate in certain tracts, particularly after the month of December, 1972.

To assess the overall loss suffered due to the failure of crops the net value of agricultural produce in 1972-73 is examined in the relation to the production in 1968-69<sup>20</sup> valued at 1972-73 prices. The sugarcane crop did not sustain any loss. However, sugarcane production is restricted largely to a few talukas of the State; as such the normal production of sugarcane provided a cushion only to a limited section of the agricultural population. For evaluating the extent of loss, two estimates, one including the production of sugarcane and the other excluding it are prepared.

The damage to the crop was the most extensive in Solapur district where all the talukas suffered heavy losses due to drought conditions. In 1972-73 the net value of agricultural produce excluding sugarcane was about 20 per cent of the normal level in Solapur district. If the income from sugarcane is taken into account then the income in 1972-73 worked to about 33 per cent of the normal income (Table 4.4). The sugarcane cultivation is restricted mainly to Malshiras and parts of Pandharpur and Sangola talukas and barring

Table 4.3 : PRODUCTION OF MAJOR CROPS IN 1972 IN DIFFERENT REGIONS OF MAHARASHTRA IN RELATION TO 1968-69 POSITION

Region	Crop													All crops*
	Rice	Wheat	Jowar	Bajra	Other Cereals	Tur	Gram	Other Pulses	Ground-nut	Other Oil-seeds	Cotton	Chillies	Sugar-cane	
<i>1972-73 production as percentage of 1968-69 production</i>														
Konkan	75.1	-	50.0	-	48.8	56.2	50.0	60.0	40.0	42.1	-	90.9	79.5	67.2
Khandesh and Nasik District	35.0	47.0	52.1	37.6	33.2	55.2	34.2	50.3	54.1	31.0	76.9	70.7	114.3	49.8
Western Maharashtra	50.7	80.4	26.7	38.9	61.0	12.5	37.3	18.7	22.0	33.3	72.8	38.6	104.1	34.6
Marathwada	9.7	28.4	34.2	19.9	29.9	40.4	29.0	40.1	19.5	48.8	41.9	41.0	47.2	34.1
Vidharbha	47.1	86.4	54.0	139.3	53.8	90.7	79.4	68.8	55.5	125.4	96.0	78.1	74.7	74.6
Maharashtra State	57.4	60.7	40.4	35.3	47.4	59.8	41.1	45.1	31.6	85.7	77.4	57.4	96.1	50.4
Total production in 1972-73 in '00 tonnes	7566	2506	13137	2257	1374	1802	486	1914	2076	556	10589	491	14490	-

Notes : Outturn of cotton in '00 bales of 180 kg. each  
Outturn of sugarcane in terms of gur

\* Weighted average of figures of percentage production for various crops, area under crop being used as weights.

Table 4.4 : EXTENT OF REDUCTION IN NET VALUE OF AGRICULTURAL PRODUCE IN 1972-73 IN RELATION TO THE CORRESPONDING VALUE IN NORMAL YEAR (1968-69)

<i>Per cent reduction in net value of agricultural produce in 1972-73</i>	<i>Name of the District</i>
More than 70	Bhir
61 - 70	Solapur, Aurangabad, Osmanabad
51 - 60	Sangli, Satara, Nanded
41 - 50	Thana, Nasik, Dhulia, Parbhani
21 - 40	Ahmednagar, Poona, Jalgaon, Vidarbha districts
Less than 20	Kolaba, Ratnagiri, Kolhapur

these green islands, the whole district lay desolate. Almost the entire districts of Bhir, Aurangabad and Sangli were affected and the net value of agricultural produce excluding sugarcane was about 25 per cent of the value of normal production in these districts, while for Osmanabad, Satara and Ahmednagar districts the corresponding percentage varied between 35 and 40. The situation in Ahmednagar district alters markedly when sugarcane production is taken into consideration. Many of the villages from Shrirampur, Rahuri and Kopergaon talukas which have extensive canal irrigation facility were not affected. In normal years sugarcane contributes to the extent of 40 per cent to the net value of agricultural produce in Ahmednagar district. Including the value of sugarcane production the net value of agricultural produce worked out to 70 per cent of the normal value of agricultural produce. In Nasik district the heavy rainfall areas viz. Igatpuri, Peth and Surgana talukas were not affected, while in the canal irrigated tracts of talukas like Niphad, the sugarcane crop was normal. The reduction in the net value of agricultural produce was nearly to the extent of 60 per cent excluding sugarcane and 45 per cent including the value of sugarcane production. In Parbhani, Nanded, Dhulia and Thana districts the net value of agricultural produce worked out to about 50 per cent of the normal level. In these districts the areas with average rainfall above 900 mm were moderately affected while in talukas like Partur, Jintur, Gangakhed from Parbhani district and Sakri, Sindkheda, Dhulia from Dhulia district, the shortfall was considerable. In Poona district, Mawal, Mulshi, Bhor and Velhe talukas falling in the high rainfall region were marginally affected. The scarcity conditions were relatively less acute in Khed, Junnar and Ambegaon talukas while Dhond, Baramati, Indapur, Purandhar and Sirur talukas were severely affected. However, the

canal irrigated tracts in Baramati and Indapur talukas that account respectively for about 35 per cent and 20 per cent of the area in these talukas were not affected. For the State as a whole the net value of agricultural produce was 63 per cent of the normal value. The estimated net value of agricultural produce worked out to Rs. 925 crore in 1972-73 at the current prices.

*Impact on the Village Economy*

A study of six drought affected talukas was carried out to assess the impact of drought of 1972-73 on the village economy. The talukas included in the study were:

<u>Taluka</u>	<u>District</u>	<u>No. of villages covered</u>
1. Sirur	Poona	13
2. Rahuri	Ahmednagar	12
3. Sangola	Solapur	11
4. Vaijapur	Aurangabad	12
5. Ashti	Bhir	13
6. Parenda	Osmanabad	12

All the talukas covered in the study were severely affected by the drought of 1972. However, in Rahuri taluka the facility of perennial canal irrigation provided protection to nearly half of the villages. In all 73 villages were covered in the survey with 11 to 13 villages being included from each taluka. Data relating to the normal cropping pattern and the area put to cultivation in 1972-73, the extent of normal irrigation and area irrigated in 1972-73, the average estimates of yields, and the extent of loss suffered in 1972-73 were obtained for the surveyed villages from the village records. On the basis of this information, the value of agricultural produce in a normal year and during 1972-73 was estimated. The distribution of the selected villages by the value of agricultural produce in 1972-73 expressed as percentage of the value of agricultural produce in a normal year is presented in Table 4.5.

The agricultural production was reported to be normal in Aradgaon from Rahuri taluka and the loss in villages like Trimbakpur, Chinchvhire, Jatap, Dhamori, was relatively small because of the dependable irrigation facilities. In other talukas only a few villages like Chik Mahud, Gayagavhan, from Sangola or Devi Nimgaon, Mandva from Ashti enjoyed some seasonal canal irrigation facility. Among the 57 villages covered in the survey from Sirur, Sangola, Vaijapur, Ashti and Parenda talukas it was observed that only in six villages the value of agricultural produce in 1972 was more than 50 per cent of the normal value of agricultural produce. It was between 20 to 30 per cent of the normal value in 23 villages, between 10 and 20 per cent of the normal value in 12 villages and less than 10 per cent of the normal value in 16 villages which were mainly from the Marathwada region.

Table 4.5 : VALUE OF AGRICULTURAL PRODUCTION IN 1972-73 AS PERCENTAGE OF VALUE OF NORMAL PRODUCTION FOR THE SELECTED VILLAGES

Taluka	Value of Agricultural Production in 1972-73 as percentage of value of normal production							
	Up to 10	10.1 to 20	20.1 to 30	30.1 to 40	40.1 to 50	50.1 to 60	60.1 and above	Total
Number of Villages								
Sirur	-	2	8	1	-	-	-	11
Sangola	1	3	6	-	1	-	-	11
Rahuri	-	-	2	1	1	4	4	12
Vaijapur	3	3	4	-	1	1	-	12
Ashti	6	4	2	1	-	-	-	13
Parenda	5	2	2	1	1	-	-	11
<b>Total</b>	<b>15</b>	<b>14</b>	<b>24</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>70*</b>

\* Information not available for three villages.

On an average the value of agricultural produce came to about 25 per cent of the normal value of production in Sangola and Vaijapur talukas and around 20 per cent in Ashti and Parenda talukas. Thus, the loss sustained in the severely affected tracts was so high that unless alternative employment opportunity on a sustained basis was provided the drought stricken population could not have survived through the drought period. Scarcity relief works were in operation all over the State throughout the drought period and the cash wage earnings on the relief works contributed to a considerable extent to the incomes of the drought-affected population.

Information relating to the operation of relief works near the villages, the number of workers together with the wage rates on different types of works was obtained from the official records for all the villages covered in the study. On this basis the earnings on the relief works were estimated at the village level (Table 4.6). The income in 1972-73 was 75 per cent or more of the normal income in villages from Rahuri taluka, where agriculture was but marginally affected or where scarcity relief works provided sustained employment to all the affected population. Of the 12 villages covered from Rahuri taluka, three had sizable area under irrigation and no relief works was opened up near these villages. In the case of three other villages which had some irrigation facility and were located near canal irrigated villages, some supplementary employment was provided between March and June 1973 on community wells. The villagers from Dhamori obtained work on the farms of Rahuri Agricultural University. Only in the case of villages Chinchale and Taharabad no work in the agricultural operations was available around the village and the villagers were dependent for their livelihood on the scarcity relief works.

Table 4.6 : THE RELATIVE INCOME LEVEL IN 1972-73 AND THE CONTRIBUTION OF EARNINGS ON RELIEF WORKS IN THE SELECTED VILLAGES

Per cent share of earnings on relief works in the total income in 1972-73	Total Income in 1972-73 as percentage of normal Income							
	20.0	40.1	50.1	60.1	70.1	80.1	90.1	Total
	to 40.0	to 50.0	to 60.0	to 70.0	to 80.0	to 90.0	to 100.0	
No. of Villages								
0.0 - 20.0	-	-	1 R	2 R	2 R	1 R	1 R	7
20.1 - 40.0	1 V	1 G	1 A	1 R 1 G	1 V 1 R	1 V	-	8
40.1 - 50.0	1 V	1 P 3 G	1 A 1 R	1 A	-	1 P	-	9
50.1 - 60.0	1 V 1 A 1 G	1 A	1 V 2 G	1 V	1 R 1 P	-	-	10
60.1 - 70.0	2 G	1 A 1 G	-	1 V	1 V 3 S	1 P 4 S	-	14
70.1 - 80.0	1 V 2 A 1 P	3 A 2 P	1 V	1 A	1 R	2 S	1 S	15
80.1 - 90.0	-	-	1 V 1 P	1 A	1 P	1 P 1 S	-	6
90.1 - 100.0	-	-	-	1 P	-	-	-	1
Total	11	13	10	10	12	12	2	70*

Note : The letters indicate the talukas in which the villages are located:

S = Şirur                      R = Rahuri                      G = Sangola  
V = Valjapur                  A = Ashti                      P = Parenda

\* Information not available in the case of three villages.

In Rahuri taluka the income earned on the relief works contributed to less than 5 per cent of the total income in the case of five villages, the contribution was between 5 and 25 per cent in the case of three villages and between 40 and 55 per cent in the case of another three villages. Only in one village viz. Taharabad the earnings on the relief works formed as much as 70 per cent of the total income. The income from agriculture in 1972-73 was 64 per cent of the normal income in the selected villages from Rahuri taluka and the income from the scarcity works,

contributed to the extent of about 16 per cent to the total income in 1972-73.

In contrast can be set the Sirur taluka from Poona district where canal irrigation facility is restricted to some ten villages on the north-eastern part of the taluka, the wells in most of the part had dried up due to the failure of rains for three successive seasons and the loss of crop was almost total in many villages. For the selected villages taken together the income from agriculture worked to about 25 per cent of the normal income from agriculture. The scarcity relief works were started around August 1972 and continued up to September 1973. The works were in operation in close succession and provided employment nearly to all those who sought work. The income from the scarcity works was more than twice the income obtained from agriculture in 1972-73. The total income in 1972-73 worked to about 80 per cent of the normal income.

In Parenda taluka of Osmanabad district, it was noted that in certain villages like Bodkha, Dhagapimri where loss of crops was almost total, the scarcity relief works were in operation on a fairly sustained basis. The earnings on the relief works formed 80 to 90 per cent of the total income in 1972-73 and the level of income in these villages was nearly 80 per cent of the normal level. In villages like Deulgaon, Wakadi, Bhoinja the income earned on the relief works was almost the only source of income; since adequate work on a sustained basis was not available the total income came to only about 50 per cent of the normal income. The workers from Karanja reported that they had to seek work in the nearby villages and found it difficult to obtain gainful work continuously, and their estimated income worked to about 35 per cent of the normal income.

In Vaijapur taluka of Aurangabad district, relief works were not opened up till January 1973 near some villages like Aagar Saigaon, Kharaj, Bhaggaon. It was reported that no work was also available in the surrounding areas; as a result the income level in 1972-73 was about 25 to 30 per cent of the normal income level in these villages. The workers from Akhur worked at Vaijapur, the taluka place as no other work was available nearby up to April 1973, while a large number of workers from Taklisakaj migrated to other areas in search of work. Relief works were in operation on more or less continuous basis near Mahalgaon, Bhatana, Bhaigaon. In Mahalgaon the earnings on the relief works accounted for 60 per cent of the total income and the total income in 1972-73 worked to about 75 per cent of the normal income.

In Ashti taluka, Bhir district, the loss of crop was almost total in most of the villages. Near Shekhapur, no relief work was opened up before March 1973. In Kinhi it was reported that the relief works could not provide employment to all those who sought work. The earnings on the relief works contributed on an average to about 60 per

cent of the total income in 1972-73. The income level was on an average 50 per cent of the normal income level and it was a little less than 40 per cent in villages like Shekhapur, Kinhi and Kumbephal.

The conditions in Sangola taluka of Solapur district were similar. The loss of crop was very extensive. The relief works provided for income which came to about 50 per cent of the total income in 1972-73. It was reported that work was not available on a continuous basis near villages like Chincholi, Mangewadi and Telmar and, the works were opened up in February 1973 near Sangewadi. The income level in 1972-73 was only about 50 per cent of the normal income level.

It will be observed that only in Sirur taluka, a taluka within 20 miles of Poona city, relief works were opened up by August-September 1972 and they were fairly adequate in number to meet the employment needs of the rural workers. As a result the total income (in money terms) was around 80 per cent of the normal income and in this the contribution of the earnings on the relief works was substantial (66 per cent). The need for opening the relief works was quite limited in Rahuri taluka because of the canal irrigation network. In the case of other talukas the agricultural income in 1972-73 came to about 20 to 25 per cent of the normal income from agriculture. The scarcity relief works could provide earnings that could make up for about 30 to 35 per cent of the normal income. Consequently the total income in 1972-73 came on an average to about 50 to 55 per cent of the normal income in money terms.

The compensation provided through the operation of the scarcity relief works in different parts of the State is considered at the district level. The estimated income from agriculture and allied activities and the estimated earnings on the relief works are only taken into consideration. The estimate of the total expenditure incurred for the operation of the scarcity relief works is available at the district level (Subramanian, 1975, pp. 573-80). The break up of this expenditure into supervisory and other payments and the wage component was not available. Considering the Government stipulations in this respect and the other non-wage expenditure including leakages the wage component is put at 85 per cent<sup>21</sup> of the total expenditure on the relief works. The expenditure for the period of one year from September 1972 to August 1973 is taken into consideration.

The contribution that the scarcity relief works made towards the total income varied considerably between districts (Table 4.7). It formed about 50 per cent of the total income in Bhir district and about 45 per cent in Solapur district, around 30 per cent in Osmanabad, Sangli and Aurangabad districts, about 20 per cent in Ahmednagar district and 15 per cent in Poona and Nasik districts. Despite the sizable magnitude of the earnings on the relief



Table 4.7 : THE RELATIVE INCOME LEVEL IN 1972-73 AND THE CONTRIBUTION OF EARNINGS ON RELIEF WORKS IN DIFFERENT DISTRICTS OF MAHARASHTRA

Income in 1972-73 as percentage of normal income (1968-69)	Percent share of earnings on relief works in total income in 1972-73			
	Up to 10	10.1 to 20	20.1 to 30	30.1 to 40
District				
40.1 to 50	Nanded		Bhir	
50.1 to 60	Satara		Aurangabad Osmanabad	
60.1 to 70	Dhulia	Thana Nasik Prabhani	Sangli	Solapur
70.1 to 80	Vidarbha Districts			
80.1 to 90	Kolaba Ratna- giri Jalgaon	Ahmednagar Poona		
90.1 to 100	Kolhapur			

works, the total income in the drought year was below the normal income by nearly 40 per cent in districts like Bhir, Aurangabad and Osmanabad because of the severe loss suffered in the agricultural production. For the State as a whole the income level in the drought year was below the normal income level by 28 per cent.

*Economic Conditions in a Severely Drought-affected Taluka - Sirur Taluka of Poona District*

Sirur taluka is located in the north-east corner of the Poona district bordering on Haveli Taluka. It is at a distance of about 30 kilometres from Poona city. The characteristic physical features of the taluka are low hills and stony uplands in the central parts of the taluka and the fertile plains along the rivers Kukadi, Ghod and Bhima. The soils in the central part of the taluka are light to medium black and have been seriously damaged by erosion. The soils in the western part are light, friable and grey which require regular and frequent rainfall to sustain any crop production. The average rainfall in the taluka is low and the variability is considerable. The average annual rainfall for the period 1951-1970 worked out to 491 mm and the coefficient of variation came to 28 per cent. The lowest rainfall ever recorded since 1860 was

246 mm in the year 1918. The rainfall noted in the drought year of 1952 was 311 mm. For the years 1970, 1971 and 1972 the total annual rainfall was 407 mm, 493 mm and 252 mm respectively.

A project for the extension of irrigation facility in Sirur taluka was included in the Beale Report (Beale, 1900, p. 30) of 1909 for protecting parts of the taluka from drought. The project envisaged a storage of 15000 mcft. capacity and a canal 185 kms. in length to command about 70 thousand hectares of land. It was considered that the project would be a productive work and at the same time protect part of the famine area in Sirur taluka. The project was included in the list of the eight projects considered as the best protective irrigation projects in the Deccan. However, no action was taken on the same till the 'fifties.

The project was included in the revised plan of post-war reconstruction scheme of 1947. The irrigable area was estimated to be 28 thousand hectares. The estimated total cost of the project was Rs. 2.8 crore. The scheme was not, however, included in the First Five Year Plan.

There was a severe drought in 1952 in Western Maharashtra and the Government machinery went into operation, starting relief works, providing *tagai* etc. Under the circumstances the demand to include the Chaskaman project in the irrigation plan of the State was vigorously pursued. A number of peasant conferences were held in the taluka voicing the demand and in 1954 a massive *morcha* was organised in support of the demand picketing collector's office in Poona. Booklets were published explaining the hardships of the peasants who were totally at the mercy of the monsoon and the need for irrigation project to help improve the lot of the peasantry was strongly put forward. The Government assured that the issue of the Chaskaman irrigation project will be duly considered. It took another 16 years to formulate the project report. In July 1970 the State Government forwarded the Chaskaman project report to the Central Government for consideration and it was pending with them till April 1973. The estimated cost of the project was Rs. 9.8 crore with irrigation potential of 28600 hectares. During the drought of 1972-73 the work of excavation of the canal was taken up as scarcity relief work.

Another project in the Bhima valley viz. Kukadi project was also included in the Beale Report. An integrated scheme covering the water resources of Ghod, Mina and Kukadi rivers was considered advantageous. The scheme of storage on Ghod river was, however, prepared separately and the work on the Ghod project was started in 1954 and the work was completed in 1961. The Kukadi project which includes storages on Mina, Kukadi was taken up only in 1969.

The Sirur taluka today receives benefit from surface irrigation to the extent of only about 6 per cent even

though about 20 per cent of the total cultivated area in Sirur taluka is irrigable through canal irrigation.<sup>22</sup> Because of the low and uncertain rainfall the wells are not a dependable source of irrigation. The irrigable command under wells is limited in extent and seasonal in character. In 1956 there were 3579 irrigation wells in the taluka, irrigating some 2360 hectares. There were a few tanks like the one at Nimgaon Bhogi or Ranjangaon Ganapati; these were however of little use for irrigation purposes. The private canals originating from small storages (about 40 kilometres in length) existing in the taluka had mostly gone into disuse due to the lack of proper maintenance.

By 1971 the number of irrigation wells in the taluka increased to 7734; of these 413 were in not use. These provided irrigation to 3097 hectares. The right bank canal from the Ghod project supplied irrigation to 11 villages from Sirur taluka. In 1971-72 the area under flow irrigation was 7060 hectares. Including well irrigation the total area irrigated was about 12000 hectares and formed about 10 per cent of the cultivated area in the taluka. Eleven small villages and 8 bigger villages have more than 50 per cent of the cultivated area under irrigation. Nine villages have between 10 and 50 per cent of the cultivated area under irrigation. These have on an average about 400 hectares each under irrigation. The remaining 51 villages had less than 10 per cent of the area under irrigation, with an average of about 60 hectares under wet cultivation, watered mainly by wells or through lift irrigation schemes.

In 1969-70, about 76 per cent of the area irrigated in the taluka was under foodgrains. About 10 per cent of the irrigated area was under fruit and vegetables, 5 per cent under sugarcane, 3 per cent under cotton and 6 per cent under groundnut, chillies and spices, etc. The area under commercial crops receiving irrigation thus formed only about three per cent of the total cultivated area.

Under the scanty and precarious rainfall conditions it is not possible to grow even the inferior millets in some areas of the taluka. Even though nearly 80 per cent of the geographical area of the taluka is recorded as under cultivation, it was noted in 1969-70 that about a third of the cultivated area was under miscellaneous non-food crops that included mainly the fodder crops. Thirty-one per cent of the area was under bajra and 17 per cent under jowar. About 6 per cent of the area was under pulses and the area under oilseeds accounted for another 7 per cent of the cultivated area.

If the land use and crop pattern of recent years is compared with the land use and crop pattern in the early decades of the present century, it is noted that the net sown area increased from about 86 thousand hectares in the first decade of this century to about 130 thousand hectares by the early 'fifties. The double cropped area increased from about two thousand hectares to 10 thousand hectares.

If the crop pattern is examined no improvement is apparent except for some increase in the area under groundnut. The major change noted is the increase in the area under the fodder crops. Diversion of some of the area put to the cultivation of foodgrains to fodder crops due to deteriorating soil conditions was noted. The area cultivated per head of rural population declined from 1.37 hectares in the decade 1903-13 to 0.93 hectares in 1971.

Agricultural activity continues to be the primary means of livelihood. The proportion of earners dependent for their livelihood on agriculture was about 71.0 per cent in 1911 whereas the corresponding proportion noted in 1971 was above 80 per cent. Even though the taluka lies within 30 kilometres of the Poona Metropolitan city, it remains virtually untouched by the growing industrial and business activity in the metropolitan city. There is little diversification in agriculture and related activities despite the large urban market located within an hour's distance.

The agricultural situation in the taluka has not changed as little effort except for some extension of irrigation facility has gone in for the agricultural development. Consequently the cropping pattern has not improved and the agricultural productivity continues to be quite poor. In the year of good rainfall, the yield of cereals is between 3-4 quintals per hectare. The average annual requirements (food, seed etc.) of the rural population of the taluka (1971) can be put at 30000 tonnes. In a normal year the estimated cereal production comes to 21000 tonnes. The production potential of the area put to other crops works out to about 12000 tonnes of cereals, which means that the basic foodgrains requirements of the rural population of the taluka could be met only in a year of normal rainfall. The economy of the taluka is, thus, a deficit one and seasonal migration for work in the irrigated tracts of Poona district is a regular feature of taluka's economic life.

The years of good crop are coming as exceptions rather than as a rule. For the last six year period the information about the scarcity affected villages is available in the District Statistical Abstract.

Total Villages	Year					
	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73
	<i>Number of Affected Villages</i>					
79	66	41	70	79	79	79

The year 1968-69 was on the whole a year of good rainfall and villages from no other taluka of Poona district were affected. Even in such a good year half of the villages in Sirur were reported to have been affected by scarcity conditions.

*The Survey* : Sirur taluka was selected for a detailed study of scarcity conditions in 1972-73 as it chronically suffers from drought conditions and effective measures to protect the rural population from scarcity conditions have not yet been carried out in the taluka. The economic situation in the taluka remains precarious. The taluka is representative of the vulnerable agricultural conditions obtained over a large part of the scarcity tract of the State.

The work on survey of the scarcity affected talukas was begun in December 1972. Of the total 79 villages in the taluka 13 villages distributed over the different parts of Sirur taluka were selected for the purpose of the survey. The selection was made taking into consideration the factors of accessibility and the availability of irrigation facility. The field work was carried out during December 1972 and January 1973. All the scarcity relief works in operation near the selected villages were visited. About 4 to 8 workers at the each of the relief works visited were interviewed with the help of a short questionnaire. Information about the land owned and land cultivated, crops cultivated, livestock position, occupation and income during the previous year, earnings on the scarcity relief works and the other earnings for the period June-December 1972, sale of assets and indebtedness was sought from the families interviewed.<sup>23</sup> In all 140 families were covered in the survey.

In January 1974 a survey which included only the agricultural labour families and artisan families was carried out in the same set of villages to collect information about the changes in occupations and earnings of these families. In all 108 families were covered in the survey.

The total number of earners in the 140 families covered in the survey was 436; of these 394 were working on the relief works and 42 workers were engaged in the work on their own farms. It was reported that some of the families particularly the agricultural labour families had out-migrated when the rains failed and there was no work in the village; the families had neither anything in store nor any capacity even to borrow and, the relief works had not yet started. They, therefore, had to leave their villages in search of work in the irrigated tracts of the district or some of them went to the cities. Consequently the agricultural labourers were somewhat under-represented among the families surveyed. They formed about 6 per cent among the surveyed families as against their strength of 10 per cent among the total families in the selected villages. When the distribution of cultivating families by the size of land-holding was compared, it was noted that the families with land-holding above 10 hectares were relatively less among the surveyed families. Some of the families with bigger land-holdings might have had some grain and other resources to sustain them for a few months and may not have joined the relief works by the month of December 1972 though many of the families with bigger land-holding were already working at the relief works.

The information about the family composition, total income in the previous year and the income for the six month period between June and December 1972 is presented in Table 4.8. The average family income for the year June 1971 to June 1972 (referred to as normal period) worked out to Rs. 1220. About 80 per cent of the income was derived from the cultivation of land and the rest from agricultural or other labour and from artisan work. The average income between June-December 1972 was around the level of last year's income in money terms in the case of smaller cultivators, while a reduction to the extent of about 20 per cent was noted for the group of cultivators with 4 to 8 hectares land-holding.

The distribution of the sample families by per capita income is considered for the two periods. The proportion of families with per capita income (half yearly) below Rs. 25 shows an increase from about 6 per cent to 15 per cent. About 83 per cent of the families had a half yearly income below Rs. 100 per capita in the period June-December 1972, while for the previous year the corresponding proportion was 74 per cent (Table 4.9).

If the changes in the income level in the drought period in relation to the normal income level are examined for the different land-size groups a definite pattern is not apparent. The major income determining factor viz. the size of the land-holding turned ineffective because of the drought conditions that affected all the cultivators operating under dry conditions. Consequently it was the strength of the working hands that could join the scarcity relief works that mainly determined the level of earnings in 1972-73.

*Employment at Scarcity Relief Works* : The availability of employment on the scarcity relief works on a continuous basis to as many members of the family as could attend the relief works was crucial for the sustenance during the drought period. In Sirur taluka the scarcity relief works were in operation since 1971. New works were opened up from July to September 1972 near most of the villages from the taluka. The relief works mainly included percolation tanks, road works and community wells. Some of the works were large in size and workers from neighbouring villages also came to these centres. The relief works were closed in the month of September 1973.

The workers employed on the scarcity relief works faced a number of problems and information in this regard was sought in the questionnaire. The major problem voiced universally was the low rate of wages in relation to the prevailing price level. There were considerable variations in the daily wages earned by different individuals. The daily average rate of earnings worked to Rs. 1.95 for men and Rs. 1.56 for women. No payment was made for the weekly rest day. In effect the overall average monthly earnings

Table 4.8 : AVERAGE INCOME IN THE NORMAL PERIOD AND THE DROUGHT PERIOD BY SIZE OF LAND-HOLDING FOR FAMILIES SURVEYED FROM SIRUR TALUKA

Size of land-holding (Hectares)	No. of families*	Average family size	No. of earners per family	Average annual income per family (normal period) (Rs.)	Average income per family for six month period between 1.6.1972 and 1.12.1972 (Rs.)
0 - 2.0	31	6.20	2.53	887	422
2.1 - 4.0	37	7.87	3.31	1122	555
4.1 - 8.0	29	7.10	3.26	1320	525
8.1 and above	24	12.06	5.18	1784	828
Landless families					
Agricultural Labour	8	5.75	2.00	860	326
Artisan	4	5.50	2.50	1233	614

\* Seven families were excluded as information relating to income in the previous year or the drought period was not available.

Table 4.9 : DISTRIBUTION OF FAMILIES SURVEYED FROM SIRUR TALUKA BY PER CAPITA INCOME

Per Capita Income (Six months) (Rs.)	Normal Period		June-December 1972	
	Families Per cent	Cumulative Total	Families Per cent	Cumulative Total
Up to- 25.0	6.2	6.2	15.4	15.4
25.5 - 50.0	19.2	25.4	23.8	39.2
50.5 - 75.0	23.3	48.7	28.5	67.7
75.5 -100.0	25.3	74.0	15.4	83.1
100.5 -125.0	9.6	83.6	7.7	90.8
125.5 -150.0	8.2	91.8	4.6	95.4
150.5 and above	8.2	100.0	4.6	100.0

came to about Rs. 90 per family for the period June to December 1972. The amount needed for a family of six persons to meet the basic cereals and other food requirements at the then prevailing prices worked out to about Rs. 145. It was reported that in the previous year i.e. 1971 many families worked on the road works opened up in the taluka as relief works. The monthly earnings in 1971 came to about Rs. 60 to Rs. 70, per family. The foodgrains were, however, then available in the open market and the

price of bajra was around 60 paise per kg. Besides some supplementary vegetables, roots etc. could be collected from the fields. The prices prevailing in 1972-73 were much higher. Wheat was available at 88 paise and maize at 80 paise in the fair price shops. The quantity supplied, however, was only about 4 kg. per person per month, while the quantity needed per person is 14 kg. It was, therefore, necessary to buy the foodgrains in the open market. In January 1973, the cheapest available grain in the market was *hulga* at the rate of Rs. 1.10 per kg. Bajra was available at Rs. 1.25 per kg. and the price of jowar, if available, was around Rs. 1.45 per kg. Purchases of *hulga* and bajra were reported by all the families. It was maintained that the earnings were not adequate to meet even the basic foodgrains requirements. It was, therefore, urged that either the wage rate should be increased, or adequate quantity of foodgrains should be supplied through the fair price shop. There was, however, no improvement in the supplies arranged through the fair price shops. The prices continued to rise till July 1973 (Table 4.10) and the wages did not keep up with the price rise. Consequently the scarcity-hit families had reportedly to skip two/three meals a week or could at the most have only some gruel of *hulga* in place of a meal at night.

A variety of complaints in relation to the actual wage payment were recorded. The major among these were (i) the classification of soil, *murum*, hard *murum* was not properly done so that proper rate of payment was not applied and they were under-paid. (ii) Proper allowance for the distance over which the earth/*murum* had to be carried was not made. (iii) At the metal breaking centres heavy boulders had to be carried over a long distance and this involved loss of time. (iv) The ignorance about the way the work of measurement was carried out made them feel helpless and they felt cheated. (v) The non-payment of small cash. (vi) Delay in measurement and the subsequent wage payment. The lack of ready cash when wheat was available in the fair price shop meant that they had to either buy it in the open market when they got the wages or to buy it on credit, which increased the effective price paid. (vii) In the earlier phases the implements were not provided in adequate number and this involved either bringing one's own implements or lack of work. At the metal breaking centre the workers were required to bring the dynamite and the fuse; this reduced their effective earnings. Complaints about injuries sustained were common at the metal breaking centres. (ix) Malpractices like bogus attendance, faulty measurements reduced the earning of those who worked. (x) The lack of provision of shade for rest, adequate drinking water supply, lack of medical facility and particularly lack of first-aid and medicines, lack of provision for the care of young children. (xi) The irregularity and uncertainty of supply of grain in fair shops and in the market and the irregularity in wage payment often meant a loss of day's work because of the frequent need to visit the market. Loss of earnings due to the time lost in fetching water, reaching



Table 4.10 : RETAIL PRICES OF ESSENTIAL COMMODITIES IN SIRUR TALUKA

(Prices in Rs. per kg.)

Commodity	January 1973	June 1973	January 1974
Rice	1.92	4.00	3.67
Wheat	1.24	2.51	2.63
Jowar	1.45	2.50	2.05
Bajra	1.25	2.39	1.50
Hulga	1.10	1.64	1.28
Tur dal	2.40	2.61	2.87
Gram dal	2.19	2.83	2.84
Gur	2.08	2.97	2.17
Potato	0.95	1.48	1.34
Chillies	5.84	-	5.15
Milk (per litre)	1.12	2.35	1.47
Groundnut oil	6.10	9.09	8.38

the work place when located at a long distance was also reported.

*Changes in Occupations :* The changes in occupations of the artisan families during the drought period in relation to their normal occupations were specially noted for 45 artisan families; this included 32 rope makers, 4 barbers, 3 carpenters and 3 potters, 2 oilman and 2 blacksmith families. About 80 per cent of the earners from these artisan families joined the scarcity relief works by August-September 1972 and continued to work at the relief works till June 1973. Only 2 barbers and 2 carpenters from relatively less affected villages viz. Hivare and Kendur could obtain work in their traditional occupations and did not join the relief works. Six families of rope makers reported that the principal earner worked in their traditional occupation and the others joined the relief works. After June 1973 all the members returned to their traditional occupations in the case of half of the artisan families, while in the case of rest of the families mainly the female earners continued to work at the relief works, while the principal male earner resumed his normal vocation, except for three rope makers in whose case all the earners in the family remained at the relief works.

The number of working persons increased considerably in the period June 1972 to June 1973. The increase was more pronounced in the case of female members, the number increased from 118 to 155 in the total of 178 female members in the age-group of 14-60 years (Table 4.11). The occupational distribution of the earners in the artisan and agricultural labour families (108) covered

Table 4.11 : OCCUPATIONAL DISTRIBUTION OF THE EARNERS FROM ARTISAN AND AGRICULTURAL LABOUR FAMILIES SURVEYED FROM SIRUR TALUKA UNDER NORMAL AND DROUGHT CONDITIONS

Occupation	Period								
	Normal Period			June 1972 to May 1973			June 1973 to December 1973		
	M	F	T	M	F	T	M	F	T
	No. of Earners								
Relief Work	-	-	-	127	148	275	65	79	144
Agricultural Labour	55	70	125	3	2	5	39	49	88
Artisan Work	54	43	97	8	1	9	25	14	39
Service	12	4	16	12	4	16	12	4	16
Trade	5	-	5	2	-	2	5	-	5
Tending Cattle	6	-	6	5	-	5	4	-	4
Other	9	1	10	5	-	5	7	1	8
<b>Total</b>	<b>141</b>	<b>118</b>	<b>259</b>	<b>162</b>	<b>155</b>	<b>317</b>	<b>157</b>	<b>147</b>	<b>304</b>

M = Male ; F = Female ; T = Total.

in the study showed that a large number of female workers were drawn into employment in the crisis situation; they joined the scarcity relief works in a larger number while the men remained in their normal occupations for a longer period and returned earlier to their normal occupations. The composition of the total earnings in the two periods was examined. It was noted that between June 1972 and June 1973, the income from the scarcity relief works formed over 90 per cent of the total earnings in the case of female workers and 75 per cent in the case of male workers. The corresponding percentages for the period June to December 1973 were 75 per cent and 50 per cent respectively.

*Effect on Education :* The need for as many members of the family to join the scarcity works to boost up the total family income so as to maintain the subsistence level of living compelled some of the students in the secondary schools or the colleges to discontinue their education for the year and join the work force. The education of the children from primary school was not generally affected as the families continued to stay in their own villages and could send the children to the school.

Information about the educands was available for 100 families from the sample. In these families there were 137 boys and 116 girls in the age-group of 6 to 17 years. Among the boys in this age-group 68 per cent were attending school and 25 per cent of the girls were attending school in normal times. Twentyfour boys out of 93 educands discontinued their education during the drought period —those

discontinuing their education were mainly from the age-group of 10-14 years. Among the girls 5 out of 29 educands left the school. The overall incidence of interruption came to about 24 per cent. The education of the students attending colleges staying at the taluka places etc. was reported to have been disturbed because of the inability of their parents to send the tiffin and cash for sundry expenses because of the drought situation.

*Sale of Assets* : The loss of agricultural production resulted in a total dependence on cash wages to meet all the daily necessities. The wage incomes obtained at the relief works were generally below the normal incomes and there was a considerable irregularity in the wage payment. The cash need had at times to be met through distress sales of cattle, utensils or other household effects or borrowings against gold or land mortgage. The agricultural labour families or the small cultivator families reported that they hardly had any assets to fall back upon during the drought period. Out of 100 families from whom the requisite information could be obtained 23 families reported sale of cattle/utensils etc. or borrowings through pawning. For example, gold was mortgaged in three cases and in one case ornaments were mortgaged. An amount of Rs. 250 to Rs. 300 was obtained by mortgaging gold. Mortgaging of utensils was reported in three cases. In one case an amount of Rs. 2000 was borrowed against a land mortgage of one hectare of land.

One case of sale of land was noted where an amount of Rs. 3000 was received against a sale of one hectare of land. One family raised Rs. 1000 by sale of gold. The amount obtained by disposal of durables like radio, cycle, watch or utensils was around Rs. 25 to Rs. 50 per article sold. The average amount obtained worked out to Rs. 155 per family resorting to distress sale, pawning etc. barring the cases of land transactions. In addition distress sales of animals were also reported. The sale of animal fetched an amount of Rs. 100-150 in the case of bullocks and Rs. 35 to 50 in the case of cow. Sixtysix bullocks, 26 cows, 7 buffaloes were sold. The bullocks sold worked to about 25 per cent of the total bullocks, the corresponding percentage was about 10 in the case of cows. Purchases of daily necessities on credit were reported by a large number of families. The usual period of borrowing was from the date of one wage payment till the time of the next wage payment i.e. between 10 to 20 days. The average amount of credit purchase was Rs. 75 per family.

Information relating to the problems faced by the agriculturists in resuming cultivation in June 1973 was sought from the cultivators. The loss of draught animals varied from about 20 per cent to 35 per cent in different villages. Applications for bullock *tagai* were made by 5 to 10 per cent of the families but they had not received the loan amount by June 1973. It was reported that the ploughing operations were carried out by renting in bullocks or the land was sown without ploughing and in some cases it

was left fallow. There were shortages of seed and also complaints about the quality of seed supplied through the Government. The extent of area not sown due to above reasons amounted to 5 to 8 per cent of the total sown area in villages like Malhan, Ambale, Ranjangaon Ganapati and Nimgaon Mhalungi.

*Effects of Drought in Antroli - A Sugarcane Village from South Solapur Taluka*

Village Antroli with a population of 998 persons or 189 households (1971 Census) located in South Solapur taluka of Solapur district was studied to evaluate the differential effects of drought on the sugarcane cultivators and the dry agriculturists in the village. Information about the land-holding, the income in the year prior to the drought year, the loss suffered during 1972-73 was collected from 117 families in the village.<sup>24</sup> In addition village level information about the crop pattern, irrigated crops, average yields, effect of drought on the agricultural situation, particularly the sugarcane cultivation in the village, the scarcity works in operation near the village etc. was collected from the village record and other official sources.

The village Antroli is located to the South-West of Solapur city, about 26 miles from the city, on Solapur-Mandrup-Vinchur Road, about 3 miles away from the main road; the State Transport buses play only on the main road. There is no river, or major stream near the village; the village depends entirely on well-water for drinking water supply and for irrigation purpose. There were 25 wells in the village prior to 1950 and 35 wells were added during the last 20 years. These are located mainly on the farms of big land-owners. The availability of electricity from 1967, gave an impetus to the extension of irrigation with the help of electric pump-sets. In 1971 there were 50 electric pump-sets and 17 oil engines (stand by arrangement) in the village.

The total area of the village according to village records is 1014 hectares. About 850 hectares of the land is under cultivation. The soil is generally fertile. The main crops grown are rabi, jowar, hulga and math which accounted respectively for 42 per cent, 14 per cent and 12 per cent of the total cropped area. Hybrid bajra, maize or wheat are grown where seasonal irrigation is available and covered about 10 per cent of the total cropped area. About 60 hectares receive perennial irrigation of which 50 hectares are put to the cultivation of sugarcane. It was reported that there were 12 sugarcane cultivators in the village, all these excepting two had a total land-holding above 12 hectares each. These together owned 35 per cent of the cultivated land in the village. Their command over the land resource made for easy access to credit which helped extension of the irrigated area and cultivation of sugarcane. The sugarcane is delivered to the Sidheshvar Sahakari Sakhar Karkhana located at Kumatha. The annual income of the two leading sugarcane cultivators

in the village was reported to be around Rs. 1 lakh each. The distribution of land in Antroli was noted to be quite skew and more so the distribution of income. The top eight per cent of the families — the sugarcane cultivators claimed as much as 68 per cent of the agricultural income, while the bottom 41 per cent of the families had only 12 per cent of the income (Table 4.12). The average income of the sugarcane cultivators was 30 times the average income of the agricultural labourers and small cultivators.

Table 4.12 : DISTRIBUTION OF FAMILIES, LAND AND INCOME BY SIZE OF LAND-HOLDING IN ANTROLI (SOUTH SOLAPUR TALUKA)

<i>Size of the land-holding (Hectares)</i>	<i>Families Per cent</i>	<i>Land held Per cent</i>	<i>Income Per cent</i>
Nil	16	-	4
Up to 2.0	25	6	8
2.1 to 4.0	31	21	10
4.1 to 12.0	18	38	10
Sugarcane Cultivators*	10	35	68
Total	100	100	100

Note : \*All the sugarcane cultivators except two had land-holdings above 12 hectares each.

During the drought 1972-73 the cultivators depending solely on dry cultivation reported a negative income from agriculture. They could not secure any crop and lost the tillage and other expenditure incurred in the initial stages. The scarcity relief work opened up near the village viz. work on road repair between Antroli and Kandalgaon was in operation during October-November 1972 and employed on an average 150 workers. The work on sugar farms provided employment during January to April 1973. Between July and September 1973 the work on two community wells employing about 40 to 50 workers per well, provided some employment to the local workers.

The effect of drought on the village economy was extremely uneven. Sugarcane acreage was only marginally affected. There was some reduction in the sugar recovery percentage because of the shortage in the irrigation water supply. It was reported that the loss sustained by irrigated agriculture was to the extent of about 10 per cent. The annual incomes of the sugarcane cultivators were estimated to be around as high as Rs. 20,000 or more per family.

So far as the agricultural labourers are concerned the work in sugarcane cultivation and other irrigated crops was available as in normal years. But the work of inter-cultural operations and particularly harvesting of dry crops was not available. This was partly compensated by the wages obtained on the relief works opened up near the village. The estimated per family annual income of the labourers was of the same magnitude (about Rs. 800) in 1972-73 as in the previous year. In the case of smaller cultivators (0-4 hectares) the reduction in income was to the extent of about 20 per cent, while for cultivators with 4 to 12 hectares of land, working under dry conditions the decline in the annual income was by about Rs. 800 to Rs. 1100 per family i.e. a reduction to the extent of about 40 per cent. For the agricultural families in the village as a whole (barring the 10 large sugarcane cultivators) the income in 1972-73 was 70 per cent of the 1971-72 level in money terms. The income from the relief works contributed to the extent of about 60 per cent in this income.

*A Survey in Remittance Area — The Drought Prone Talukas viz. Khandala, Man, Khatav and Koregaon of Satara District*

The Man, Khatav, Khandala, Koregaon talukas of Satara district chronically face scarcity situation. The average rainfall is low (about 500 mm) and uncertain. These talukas have been sending out a stream of male workers into military services and other salaried and wage services over the last century. The migration of male members is reflected in the demographic composition of the population. The number of females per 1000 males was 1062 in the rural areas of the Satara district as against 985 in the rural areas of the State as a whole in 1971. The Census of migrant population in Greater Bombay in 1961 revealed that among the migrants from Satara district 70 per cent were males and 30 per cent females.

A quick survey of six villages/wadis viz. Khindawadi, Asawali, Pingli, Ranshingpur, Karanj-Peth and Enkul from the above talukas was completed during January-February 1973.<sup>25</sup> In all 990 households were covered in the study. There were 2165 earners in the households surveyed; of these 30 per cent were in salaried jobs. The total area under cultivation in these six villages together was 2000 hectares. The area receiving well irrigation formed about 12 per cent of the total cultivated area. Jowar is the major crop grown in this area. Some area is put to the cultivation of bajra, pulses, groundnut; cultivation of wheat, chillies and potato was reported where well-irrigation was available. During 1972-73, the crop yields were reduced to the extent of 80 per cent of the normal yields. The reported reduction in the production was over 90 per cent in the case of wheat, rice and chillies and it was between 75 and 80 per cent in the case of bajra, onion and groundnut. In the case of jowar the production in 1972-73 worked out to about 22 per cent of the normal production. The production came to only 10 per cent of the normal

production, for the group of cultivators with less than 2 hectares of cultivated holding, while for other cultivators the corresponding percentage varied between 20 and 30.

The villagers had to depend heavily on the relief works for their livelihood. On an average 38 per cent of the earners worked on the relief works. The corresponding proportion was 63 per cent in the case of landless labourers and 60 per cent in the case of small cultivators (Table 4.13). The income of the landless families in money terms was more or less on par with their normal level of income. The cultivators in the size groups of 0 to 2.0 hectares and 2.1 to 4.0 hectares experienced a reduction in their income by about 15 per cent while those with cultivated holding above 4 hectares sustained a loss to the extent of about 35 per cent.

Table 4.13 : AVERAGE INCOME IN NORMAL PERIOD AND THE DROUGHT PERIOD BY SIZE OF LAND-HOLDING FOR FAMILIES SURVEYED FROM SATARA DISTRICT

Size of land-holding (Hectares)	No. of families	Average family size	Average no. of earners per family	Per cent earners working on relief works	Average annual income per family	
					Normal period (Rs.)	Drought Period* (Rs.)
Landless	121	5.3	1.64	63	1140	1100
Up to 2.0	526	6.3	1.96	60	1641	1345
2.1 to 4.0	204	8.4	2.36	52	2110	1830
4.1 and above	139	9.8	3.26	32	4367	2773
Total	990	7.1	2.18	38	2029	1578

\* The total earnings are estimated on the basis of information relating to salary income, agricultural production, number of earners working on relief works and the average wage rates at relief works.

The income in 1972-73 (excluding the salary income and remittances) of the total families covered in the study was about 50 per cent of the normal income and the earnings at the relief works contributed to the extent of about 50 per cent in the income. However, if the salary incomes are taken into account the decline in the income is not so considerable, the extent of reduction worked out to the tune of 30 per cent of the normal income.

#### Loss of Livestock

In the face of acute scarcity of water and fodder resources it was difficult to maintain the livestock, particularly the bovine population in the drought affected villages. Some cattle was sent to the cattle camps, but such

number was negligible. The total number of cattle camps sanctioned by the Government was 376 with an intake capacity of 466910 cattle. Out of these, only 156 camps were opened up and the maximum number of cattle admitted was 40809. "On the whole the experiment of cattle camps cannot be said to have been a success" (Subramanian, 1975, p.233). In addition to the cattle camps organized by the forest department and by public institutions, arrangements to accommodate some 25000 cattle were also made in the neighbouring districts of Vidarbha viz. Buldhana, Akola, and Amravati. It was reported that 23 camps in Buldhana admitted 14712 cattle heads.

The facility of cattle camps was not generally availed of for a number of reasons like the inability to take the cattle to far off places because of the expenditure involved and the uncertainty of transit arrangements coupled with the doubts about the survival of the cattle in the camp. The cattle was generally transferred to some relatives or to the cattle camps organized by the sugar factories in the nearby irrigated areas. Otherwise the animals were sold when the chances of survival through the long drought period appeared dim. Still some cattle succumbed because of the acute shortage of feed and fodder. The incidence of mortality varied greatly between the various regions. The worst affected districts in this respect were Ahmednagar, Solapur, Poona, Aurangabad, Osmanabad, Bhir, Nasik, Dhulia and Sangli. The information available in relation to the loss of cattle and other livestock is very scanty; the available data are presented to get some indication of the losses involved and on the basis of this information, an attempt is made to assess the total loss of livestock during the drought 1972-73.

In the study carried out in Ahmednagar and Osmanabad districts it was noted that the loss of livestock due to death was 37 per cent and 52 per cent respectively. The percentage loss was 14 in the case of bullocks and nearly 24 in the case of cows and buffaloes in Ahmednagar district while in Osmanabad district the reported loss was considerably more, the corresponding percentages being 20 and 41 respectively. The average value of livestock lost per household reporting loss of livestock was estimated to be Rs.430 (Subramanian, 1975, pp. 614-15).

Information about the cattle lost was collected from the families covered in the study of the selected villages from Sirur taluka, Poona district. The loss due to death or sale amounted to about 32 per cent of the total cattle population in the sample families. The loss sustained by the bigger cultivators (land-holding above 10 hectares) was significantly less viz. about 6 per cent. It was noted that they transferred their cattle to safe areas. The survey in Sirur taluka was conducted in the early parts of 1973, and reflect the loss during the first half of the drought period. The losses might have gone up particularly during the summer of 1973.



Information about the livestock population in the village and the losses sustained during 1972-73 was obtained from the selected villages from the six drought affected talukas studies. There were large variations in the extent of loss sustained and also in the cause of the loss of livestock between different villages. The averages worked out for the taluka on the basis of village level data, indicated that the extent of loss was quite high in Parenda talukā where nearly 35 per cent of the livestock population reportedly suffered loss and about 75 per cent of this was due to death. The extent of loss was around 30 per cent in Sangola taluka and Vaijapur taluka; in this the loss due to death was respectively 55 per cent and 45 per cent. In Rahuri taluka the percentage of livestock population lost worked to about 17; in this the major loss was through the sale of cattle and only about 4 per cent of the livestock was lost due to death. The extensive canal irrigation facility in the taluka, the supply of fodder from the sugarcane farms and the opening of the cattle camps through the initiative of the co-operative sugar factories helped, keep down the extent of loss of cattle in a taluka like Rahuri.

The estimation of loss of livestock for the State as a whole had to be worked out on the basis of the limited information available through the different village studies which broadly indicated the extent of loss of livestock. For certain districts like Dhulia or Sangli no village level study was available. In such a case the relevant percentages for a district with similar level of intensity of drought for which information relating to the loss of livestock was available were used for estimation purposes. Keeping in view the limitations the estimates are presented to get a broad indication of the magnitude of the loss involved.

According to 1972 Livestock Census there were 62.06 lakh bullocks, 45.87 lakh cows in the Maharashtra State. The total bovine population was 180 lakh and the total livestock population was 263.6 lakh. Loss of livestock population was experienced in 14 districts of the State viz. Nasik, Dhulia, Jalgaon, six districts of Western Maharashtra and five districts of Marathwada which had together 62 per cent of the total livestock population of the State. The estimated number of livestock population lost worked to 21.8 lakh which comes to 13 per cent of the livestock population of these districts. The incidence of loss was the highest for cows viz. 25 per cent. It worked to 20 per cent in the case of buffaloes and 18 per cent for bullocks. It came to about 8 per cent for the young stock and other livestock like sheep, goat.

The estimated number of bullocks lost was about 6.33 lakh and the corresponding number was 6.26 lakh in the case of cows and 2.45 lakh in the case of buffaloes. It was estimated that about 6.1 lakh of cattle were lost due to death and 8.2 lakh of cattle were sold.<sup>26</sup> (Subramanian, 1975, p.239). For the bovine population as a whole the

estimated loss through death worked to 7.2 lakh and 10.2 lakh through sale. The total loss inflicted on the cultivators on account of the loss of livestock was estimated to be of the magnitude of about Rs. 61 crore.

### *Supply of Foodgrains*

The problem of foodgrains supply became quite acute in Maharashtra State from September 1972 when the failure of kharif crop became a certainty. The production of foodgrains in the previous two years was also considerably below the normal level (Table 4.14). The normal production of cereals in the State can be put around 60 lakh tonnes. In addition on an average about 12 lakh tonnes of cereals are received from the Government of India. The total requirements of cereals for consumption purpose can be put at

Table 4.14 : PRODUCTION AND CONSUMPTION NEEDS OF CEREALS IN MAHARASHTRA STATE  
(in thousand tonnes)

Year	Production of cereals	Cereals available for consumption*	Receipts of cereals through Central Government	Total	Estimated requirement for consumption <sup>a</sup>	Gap
1961-62	5603	5295	385	5680	6821	1141
1968-69	5913	5595	1229	6824	8098	1274
1969-70	5652	5341	1168	6509	8282	1773
1970-71	4725	4442	918	5360	8467	2907
1971-72	4306	4035	1412	5447	8652	3205
1972-73	2684	2462	2356	4818	8837	4019
1973-74	6177	5922	1573	7495	9022	1527

\* Estimated by making due allowance for seed requirements and wastage.

a At 168 kg. per person per annum.

Source : *Maharashtra, An Economic Review* for relevant years.

about 85 lakh tonnes in 1971, at the average rate of 14 kg. per month per person.<sup>27</sup> Making allowance for seed, waste etc. and considering the supplies from the Government of India and the other States, the gap in 1971 would have been around 18 lakh tonnes had the normal production level been maintained. However, the production of cereals in 1970-71 and 1971-72 was 47.25 lakh and 43.06 lakh tonnes respectively. The cereal production in 1972-73 reached a record low figure of 26.84 lakh tonnes. If the bare need of 12 kg.

per person per month was to be met the gap during the year 1972-73 was likely to be as much as 51 lakh tonnes. The normal level of supplies through the Central Government was about one lakh tonnes per month which were issued through the fair price shops mainly in the urban areas. It was necessary, because of the drought situation, to step up vastly the supplies of cereals in the rural areas through the network of fair price shops.<sup>28</sup> The stocks at the village level were almost exhausted and little of the new production was coming in the market, so that the bulk of the rural population had to depend on the supplies from the fair price shops and the weekly markets. In a normal year the large cultivators (possessing 3 hectares or more of land) were noted to be drawing nearly 80 per cent of their supplies of cereals from their farm production and the corresponding proportion for the small cultivators was about 50 per cent (Subramanian, 1975, p.444). In the year 1972-73 the cereal production from own-farms met about twenty per cent of the total needs in the drought affected districts and these supplies were available mainly with the larger cultivators.

The State Government could procure through monopoly procurement 94000 tonnes of paddy, 33000 tonnes of jowar and 11000 tonnes of wheat (MER, 1974, p.42). Part of this supply had to be reserved for seed purposes. The State was thus dependent very heavily on the Central Government for securing larger quantum of cereals. The allotment to the State till August 1972 was around one lakh tonnes and the actual receipts around 0.75 lakh tonnes. From the month of September 1972 the receipts increased to about 1.6 lakh tonnes. As the foodgrains supply situation continued to deteriorate the State Government requested the Centre for a supply of about 2.3 lakh tonnes in November 1972, 3.0 lakh tonnes in March 1973 and 3.54 lakh tonnes in May 1973. About 3.6 lakh tonnes of cereals were necessary for supplying the stipulated quantum through the fair price shops viz. 6 kg. per month per adult in the rural areas. However, the allotment continued to be around 1.7 lakh tonnes till April 1973. Even when the allotments were sanctioned actual supply was often not forthcoming due to the tardy delivery schedule of the Food Corporation of India, delays in transit etc. As the milo and wheat delivered by the FCI from imported stock were contaminated and called for cleaning before issue, there was a further delay in the delivery.

"As against the minimum of 12 kg. per adult per month, the public distribution system was able to supply hardly 3 to 4 kg. per month per adult" (Subramanian, 1975, p. 128). The open market supplies of cereals were quite uncertain and costly. As a result the situation took a grave turn in certain areas. In April 1973, satyagraha, demonstrations, morchas demanding regular and adequate supply of cereals were reported from many places in the State. At Malegaon and Sinnar (Nasik district the firing opened up to disperse the angry agitators resulted in some deaths.<sup>29</sup> The State Government now frantically tried to secure an increase in the allotment from the Central Government. Subsequently

the allotment to the State and was raised from 1.78 lakh tonnes in April 1973 to 2.70 lakh tonnes in May 1973. For the next three months viz. June, July, August the allotment sanctioned stood at 2.5 lakh tonnes. During the period September 1972 to August 1973 a total of 23.56 lakh tonnes i.e. double the normal supplies were made available by the Central Government to the Maharashtra State. Adding the quantity available for consumption from the local production of about 27 lakh tonnes, the total supplies work out to 48 lakh tonnes. The average consumption level arrived at on the basis of field data was between 10.5 kg. to 11.0 kg. per person per month. The balance of about 20 lakh tonnes of cereals must have been met on private account through imports of foodgrains from other states.

There were large variations in the supply of foodgrains at the village level. As seen earlier the overall loss in the production of cereals ranged from about 50 per cent to 90 per cent in the drought affected areas of the State. In addition the supplies through the fair price shops were extremely irregular and varying. It was reported that in village Anala, Parenda taluka (Osmanabad district), the chairman of the co-operative society, an ex-M.P., could arrange for the adequate supply of cereals (about 6.5 kg. per month per adult). The level of supply was 6 kg. per month per adult in 6 villages from Sirur taluka — a taluka within easy access from Poona city and in three irrigated villages from Rahuri taluka. In 39 villages it was reported to be 4 kg. per month per adult. The quantum received was reported to be 3 kg. in 6 villages and as low as 2 kg. per month per adult in 16 villages, 11 of which were from Vaijapur and Parenda talukas from the Marathwada region and three from Sangola taluka.

#### *Level of Living*

As noted earlier, the family income in money terms in 1972-73 was on par with the normal level in the case of agricultural labourers and small cultivators whereas in the case of large cultivators there was a sizeable reduction in the total income. The family income was largely determined in 1972-73 by the number of earning members working on the relief works; as a result there was a marked levelling of current incomes between the various agrarian strata.

Even though the money income level was by and large maintained there was a fall in the real income particularly during 1973. The acute shortages experienced in the drought-hit districts pushed up the retail prices of foodgrains as well as of other essential food items like groundnut oil, gur etc. (Table 4.15). There was a continuous rise in the retail prices from June 1972 and the price rise was particularly sharp after March 1973 (Table 4.16). The index of retail prices was 200 in May 1973 with June 1972 prices taken as 100.

Table 4.15 : RETAIL PRICES OF ESSENTIAL COMMODITIES IN RURAL AREAS OF MAHARASHTRA

(Prices in rupees per kg.)

Commodity	June 1973					September 1973				
	Non-scarcity Area	Scarcity Area	Solapur District	Ahmednagar District	Osmanabad District	Non-scarcity Area	Scarcity Area	Solapur District	Bhir District	Aurangabad District
Rice	2.69	3.34	3.85	3.65	3.25	2.98	3.37	3.66	3.85	3.84
Wheat	1.92	2.32	2.37	2.11	2.37	2.20	2.38	1.94	2.27	2.39
Jowar	1.60	2.15	2.33	2.12	2.32	1.85	2.05	1.90	2.20	2.36
Bajra	1.89	2.01	2.20	1.92	2.15	1.75	1.75	1.67	2.13	2.13
Tur dal	2.73	2.71	2.80	2.98	2.75	2.56	2.54	2.67	2.45	2.67
Gram dal	2.10	2.21	-	2.45	2.50	2.40	2.38	2.48	2.61	2.43
Mug dal	3.09	3.32	3.80	-	-	2.88	3.01	-	-	-
Gur	2.23	2.15	2.30	2.27	2.30	2.45	2.30	2.31	2.23	2.21
Sugar	4.01	3.95	4.00	3.73	-	3.81	3.66	3.95	4.02	3.78
Groundnut oil	8.24	8.26	9.10	9.17	8.80	9.00	8.92	9.43	9.61	9.74

BROUGHT IN MAHARASHTRA

Source : Information about the retail prices ruling in Non-scarcity areas and Scarcity areas is taken from *Parched Earth*, pp. 620-21 and the information about the prices in different scarcity affected districts of the State is obtained from a few centres in the respective districts through field study.

Table 4.16 : INDEX OF RETAIL PRICES FOR RURAL SCARCITY AFFECTED AREAS OF MAHARASHTRA

Month		Price Index	
		Jowar	Major food items*
June	1972	100.0	100.0
July	1972	110.2	106.4
August	1972	121.4	112.0
September	1972	123.5	117.2
October	1972	122.4	117.5
November	1972	124.5	122.1
December	1972	127.6	126.1
January	1973	127.6	127.2
February	1973	130.6	132.0
March	1973	141.8	142.3
April	1973	156.1	151.6
May	1973	200.0	182.0
June	1973	219.4	198.2
July	1973	225.5	203.3
August	1973	204.1	190.7
September	1973	209.2	193.8

Note : \* Weighted price index covering the following food items:  
Rice, Wheat, Jowar, Bajra, Tur dal, Gram dal, Moong dal,  
Urid dal, Groundnut oil, Sugar and Gur.

Source : *Parched Earth*, pp. 620-21.

The level of living was noted to be on an average below the normal level of living by about 40 per cent for those who depended primarily on the scarcity relief works for their livelihood. The level of consumption expenditure of agricultural labourers and small cultivators was almost on par in 1972-73 whereas normally the ratio of expenditure is noted to be of the order 1:1.3. In the case of medium cultivators severely affected by the drought, the level of living was reduced somewhat below that of agricultural labourers in a normal year.

If the consumption of cereals alone is taken into consideration (Table 4.17) the proportion of population with cereal consumption below 12 kg. per month per person

Table 4.17 : QUANTITATIVE INTAKE OF CEREALS IN NORMAL PERIOD AND THE DROUGHT PERIOD BY OCCUPATIONAL GROUP

Occupational Group	Year	Per capita monthly intake of cereals in kg.			Total Population
		Up to 12	12-15	15 and above	
(Percentage distribution of population)					
Large Cultivators	1967-68	25.52	28.70	45.78	100.00
	1972-73	44.69	29.98	25.33	100.00
Small Cultivators	1967-68	52.69	19.02	28.02	100.00
	1972-73	61.24	25.19	13.57	100.00
Farm Labourers	1967-68	41.43	19.93	38.64	100.00
	1972-73	60.90	25.35	13.75	100.00
Industrial Workers	1967-68	42.76	21.72	35.52	100.00
	1972-73	65.28	27.08	7.64	100.00
All Households	1967-68	38.49	22.48	39.03	100.00
	1972-73	58.86	25.19	15.95	100.00

Note : Based on data for ten districts viz. Poona, Ahmednagar, Solapur, Satara, Sangli, Aurangabad, Bhir, Osmanabad, Nasik and Dhulia collected through the National Sample Survey, 22nd Round and 27th Round.

Source : *Parched Earth*, p.446.

increased from 38 per cent in the normal period to nearly 60 per cent during the drought period for the drought affected districts. The drought situation thus, pushed 50 per cent additional population below the subsistence level of cereal consumption. The corresponding proportion was even larger, in villages where the crop failure was total and the supply of cereals through the fair price shops was extremely meagre.

Apart from the short term impact of the drought which was directly reflected in the lowering of the level of living of the drought-affected population, there was the long term impact in terms of the loss of livestock, sale of assets, increase in the borrowings and non-repayment of loans in the year 1972-73 and lack of investment due to the net loss incurred in agriculture. Since the field investigation was carried out during the drought period at the work sites it was not possible to get information on the above aspects. On the basis of the limited information available through the official records the broad dimensions of the problem may be summed up.

As noted above the loss in terms of crops lost was estimated to be around Rs. 670 crore; the loss on account of livestock death/sale was estimated at Rs. 61 crore and the loss due to the sale of other assets amounted to Rs. 25 crore. The loss was partly made up by working on the relief works. Wages to the tune of about Rs. 180 crore

were earned by the affected families during the period April 1972 to December 1973. The other major loss was in terms of investments forgone. To meet the immediate problem, *tagai* loans were extended by the Government. *tagai* loans to the tune of about 16 crore were disbursed during 1972-74 for the purchase of fodder, seed and fertilizers, bullock service hire etc. and for the purchase of bullocks the loans supplied amounted to-Rs. 4.93 crore. It will be thus seen that the amount earned by way of wages made up for about 25 per cent of the income lost and the quantum of special *tagai* was small. The drought affected families had to bear this burden for some years to come in the form of lowered levels of living because of the twin factors viz. (a) the higher debt burden due to debt repayment rescheduling and new borrowings to partly make up for the lost assets, (b) lack of funds for effecting improvements/repair etc. in agriculture.



## CHAPTER V

### SCARCITY CONDITIONS AND SCARCITY RELIEF WORKS

#### *Review of Scarcity Conditions in the Years 1970, 1971 and 1972*

The seasonable pre-monsoon showers in all parts of Maharashtra and the widespread and adequate rainfall in the months of June and July 1970 facilitated the timely completion of kharif sowing. The continuous and heavy rains received in the months of August and September, however, adversely affected the crops notably jowar in Marathwada and Vidarbha. Considerable damage was also caused to the cotton crop. The dry weather that prevailed in October affected the growth of dry rabi crops. The total rainfall received in 1970-71 was below the normal in the scarcity-prone areas of Ahmednagar, Poona, Solapur, Satara and Sangli districts while in Konkan, Khandesh and Vidarbha and over major parts of Marathwada the rainfall was above normal. The crop yields of the important crops like jowar and cotton were respectively 50 per cent and 65 per cent below the normal. The shortfall in relation to the normal production was to the extent of about 20 per cent for all the foodgrains taken together. Conditions of scarcity were declared to exist in 16,147 kharif villages and 6,915 rabi villages out of the total 35,778 villages in the State. The estimated affected population was about 1.9 crore in the total rural population of 3.47 crore. During the summer of 1971 the scarcity relief works that were opened up employed about 4 lakh workers (Table 5.1). The scarcity relief works were located mainly in Akola, Amravati, Buldhana, Yeotmal, Jalgaon districts and the five districts of Marathwada.

*The Year 1971 :* The rainfall in the months of June and July 1971 was inadequate and scanty in many parts of the State, adversely affecting the sowing of kharif crop in certain parts of Western Maharashtra and resulted in stunted growth in Western Vidarbha. The rains received in August and September proved beneficial for the growth of kharif crops in Vidarbha and facilitated the sowing of rabi crops in the Marathwada region. However, the almost total absence of rains in October adversely affected the rabi jowar crop. In 1971-72, the jowar production was 40 per cent below the normal production and the total foodgrains production was about 75 per cent of the normal production. The cotton production was 15 per cent below the normal production and the groundnut production was 25 per cent below the normal production.

In the year 1970-71, the quantum of rainfall was adequate over the major part of the State but its untimely occurrence and ill-distribution affected the crop production while in 1971-72 the rainfall received was below the normal in many districts of the State. The rainfall was deficient in Jalgaon and Ahmednagar districts, the Vidarbha and Marathwada districts and parts of Solapur, Satara and Dhulia districts.

Table 5.1 : NUMBER OF SCARCITY RELIEF WORKS AND AVERAGE DAILY ATTENDANCE AT RELIEF WORKS DURING 1971-74

Month	1971-72		1972-73		1973-74	
	No. of works	Average daily labour attendance ('000)	No. of works	Average daily labour attendance ('000)	NO. of works	Average daily labour attendance ('000)
April	N.A.	423.7	2321	191.5	47759	4018.6
May	5151	487.5	2863	271.5	64406	4946.5
June	4779	496.3	2915	315.1	64404	4736.2
July	5524	969.2	2721	413.3	42521	2724.3
August	7157	1335.7	4210	1048.5	25198	1546.8
September	6249	1425.4	5058	1244.0	15113	773.3
October	6847	829.5	6462	1538.8	2055	142.2
November	6129	544.4	7136	1782.5	1354	92.1
December	N.A.	288.1	8577	2017.0	2008	131.3
January	N.A.	179.8	14142	2445.2	-	-
February	N.A.	179.1	22560	2901.9	-	-
March	2314	125.4	38100	3504.9	-	-

Source : *Parched Earth*, pp. 566-81.

The attendance on scarcity relief works increased from about 5 lakh in May-June 1971 to 10 lakh in July 1971. The relief works were mainly concentrated in the five districts of Marathwada, Jalgaon, Akola and Ahmednagar districts. The number of workers increased to about 14 lakh by September 1971. The number declined during the rabi season and in March 1972, the average daily attendance on the scarcity relief works was only about 1.25 lakh workers. There was some increase in this number during the summer months. In June 1972, the average daily labour attendance on the relief works was about 3 lakh.

*The Drought Year 1972* : The rains in 1972 set in, in the last week of June and continued for a couple of weeks. There was a dry spell in many parts of the State in late July and early August. This caused a severe set back to the kharif crops especially to groundnut and pulses. There were widespread rains in the second fortnight of August in the Vidarbha region, parts of Nanded, Parbhani and Khandesh districts. After the middle of September there was a dry spell for about a month which affected adversely the sowing of rabi crops. In districts like Aurangabad, Osmanabad,

Bhir, Ahmednagar, Sangli, Solapur and Nasik the conditions were extremely precarious. Scarcity conditions were declared in all the villages which had *annevari* of 4 annas or less. The total number of such villages was 19,888 kharif villages and 5,600 rabi villages.

The rainfall was, thus, insufficient for three years in succession in Ahmednagar district, and the adjoining talukas of Vaijapur, Patoda, Parenda from Marathwada and major parts of Sangli, Satara and Solapur districts and parts of Dhulia and Jalgaon districts.

In 1972 the foodgrains production was 54 per cent below the normal production and that of groundnut nearly 70 per cent below the normal production. The production of cotton was 77 per cent of the normal production as the districts of Vidarbha and Parbhani, Nanded, Jalgaon — the important cotton growing districts — were not severely affected by drought conditions. The sugarcane production was normal as it is a fully irrigated crop.

The daily labour attendance at the scarcity relief works was 4.1 lakh in July 1972 and the number increased to 10.5 lakh by the month of August as the rains failed particularly in the districts of Aurangabad, Bhir, Osmanabad, Ahmednagar and Solapur. The demand for opening up a number of scarcity relief works and the demand for continuous employment on relief works became pressing from July 1972. Reports of *morchas*, picketing the Tahsil office with demands to re-open the scarcity relief works of percolation tanks or roads which were earlier closed down, to speed up or to expand the ongoing works to provide for sizeable employment appeared from various talukas viz. Shrigonda, Karjat, Sangamner, Shrirampur of Ahmednagar district and also from Satara, Solapur and Nasik districts in the months of July-August-September-October 1972.<sup>30</sup> (See Appendix I). When the prospects of rabi crops appeared very bleak, the pressure for opening up of scarcity relief works mounted up very rapidly. Massive *morchas* demanding declaration of the taluka as a scarcity affected taluka, immediate action to open up scarcity relief works and application of scarcity code were reported from many talukas of Sangli, Satara, Kolhapur and Aurangabad districts in the months of October-December 1972. It was also urged that suitable measures in relation to debt relief be taken forthwith, provision for drinking water supply and fodder be made immediately, supply of foodgrains and other essentials be made through the Government shops so that the price hike is kept in check, concessions in college fees be given and provision for food be made for the rural students. Demands for taking up some specific works of dam, canal, and percolation tanks or certain sections of roads etc., were also put forth.

The mounting public pressure and particularly the migration of the scarcity ridden rural population towards the cities like Bombay, Poona made the situation alarming. Reports of migration from the western parts of Nasik district

appeared in September-October 1972. By the middle of November migration from parts of Solapur, Bhir, Osmanabad, Aurangabad, Ahmednagar and Poona districts in the search of employment was reported on an increasing scale. Such a migration to the cities was viewed with grave concern by the Government as the eruption of serious law and order problems appeared round the corner if the stream of migration was not halted immediately. There was a total failure of crops in thousands of villages in the State. As a result large sections of the rural population had no work, no income and no food in the village. Unless relief works were opened up on a massive scale the stream of migration could not be kept under control. It was considered best to open up the relief works in the vicinity of the villages themselves (within 5 kms.) so that the problem of provision of labour camps with all the attendant facilities would not arise. The relief works were, thus, of ubiquitous nature and included mainly works like desilting village tanks, village roads, metal breaking centres etc. The number of relief works opened up was very large and increased continuously. However, the number of workers at each work centre remained small. The average labour attendance per work was about 150 during 1972-73 while it decreased to 75 in the period April-September 1973. The number of works increased from 5000 in September 1972 to 6462 in October, 7136 in November and 8577 in December 1972. After December there was an increase in the number of works by leaps and bounds. The total number of scarcity relief works was 14,142 in January 1973, 22,560 in February, 38,100 in March, 47,759 in April and 64,406 in May 1973. There was a sharp increase in the number of workers from about 20 lakh in December 1972 to 49.46 lakh in May 1973.<sup>31</sup> (Table 5.1.)

The number of workers attending the relief works varied considerably between the districts depending upon the severity of the drought conditions. Daily attendance of workers as high as 5.34 lakh, 4.91 lakh, 4.57 lakh and 4.25 lakh was reported in the months of May-June 1973 from the districts of Osmanabad, Solapur, Aurangabad and Bhir respectively. Viewed in relation to the estimated number of workers dependent on agriculture and related activities in these districts the peak attendance at the relief works came to 65 to 70 per cent in Solapur and Bhir districts (Table 5.2). The corresponding proportion was 60 per cent in Osmanabad district, it varied between 50 and 55 per cent in Aurangabad, Sangli and Ahmednagar districts and was around 40 per cent in Poona and Nasik districts. For the State as a whole the peak labour attendance worked out to 28 per cent of the estimated number of rural workers normally dependent on agriculture and related artisan work for their livelihood, and to 30 per cent if only the workers dependent on agriculture are taken into consideration.

*The Year 1973* : Pre-monsoon rains were received in May 1973 in South Konkan and Bhir, Osmanabad, Buldhana and Chandrapur districts. Monsoon rains were received in early June in

**Table 5.2 : DISTRICTWISE PROPORTION OF RURAL WORKERS IN AGRICULTURE AND RELATED ACTIVITIES ATTENDING SCARCITY RELIEF WORKS DURING THE PEAK RELIEF EMPLOYMENT PERIOD (MAY-JUNE 1973)**

<i>Workers at relief works at peak employment period as percentage of estimated workers in agriculture and related activities in the district</i>	<i>Name of the District</i>
0 - 10.0	Kolaba, Ratnagiri, Wardha, Bhandara, Chandrapur
10.1 - 20.0	Jalgaon, Kolhapur, Akola, Amravati, Yeotmal, Nagpur
20.1 - 30.0	Thana, Dhulia, Satara, Nanded, Buldhana
30.1 - 40.0	Poona, Parbhani
40.1 - 50.0	Nasik
50.1 - 60.0	Sangli, Ahmednagar, Aurangabad
60.1 - 70.0	Solapur, Bhir, Osmanabad

most parts of the State. All the regions of the State excepting Vidarbha received good rainfall. Even in Vidarbha, where rains were delayed, the subsequent continuous rains helped the kharif crop production. The condition of all the kharif crops except cotton was good. The position of rabi crops was also satisfactory. The production in 1973-74 was above the normal production in the case of foodgrains and below the normal by about 30 per cent in the case of cotton and groundnut.

With the onset of monsoon in June the cultivators returned to normal agricultural operations particularly in the kharif areas and the process of closing down of the scarcity relief works set in. The Government was apprehensive that the continuation of relief works might affect the availability of labour in agriculture and was also eager to reduce the expenditure on relief works at an early date. The works were rapidly closed down in July and August 1973 and they were to be totally closed down by October 1973 in the kharif areas and December 1973 in the rabi areas. In the months of July-August there were reports from several places from districts of Aurangabad, Osmanabad, Satara, Kolhapur that the workers agitated for the continuation of the ongoing relief works, but with little success. The number of relief works in operation decreased rapidly from 42,521 in July 1973 to 25,198 in August, 15,113 in September and 2,055 in October 1973. The number of workers on relief works was 7.7 lakh in September and 1.42 lakh in October 1973.

*Scarcity Relief Works*

The relief works were opened up in the areas affected by drought conditions to provide gainful employment to the able-bodied adults so that they could be partly compensated for the shortfall or loss of crop consequent on the drought or for the deprivation of an opportunity to work in agriculture for a living.

It was deemed desirable to couple the provision of gainful employment with the creation of permanent productive assets. However, a number of pre-conditions need to be fulfilled to satisfy the above aim. Firstly, it is necessary that the requisite survey work and preparation of plans and estimates of the various works are ready. The necessary technical and supervisory staff to execute the works is appropriately mobilized. The requisite tools, equipment and the materials are made available and the land acquisition procedures are completed. The Government is ready to open up labour camps wherever the workers have to be employed on large works. The workers on relief works receive proper training to undertake the various tasks involved. The work taken up as relief work is completed to a safe level and later on taken up to fruition; otherwise the work like a community well begun as productive work may prove to be unproductive if the construction work is not completed and arrangements for water lifting are not made.

The failure of rains in 1972 seemed to have caught the administration almost unprepared. Total employment of the order of about 5 to 8 lakh could be provided by speeding up the programmes of road work, bunding work etc. However, for a task five to ten times as large the Government did not have either the plans or the personnel and equipment. The unemployment situation was so acute and the pressure to open up relief works was so persistent that works had to be opened up in large numbers in a quick succession over some 20 districts of the State. In the process the productive aspect of the relief works was hardly given the due consideration. It was stipulated that the relief works be opened up within a distance of about five kilometres of the affected villages, so that the most ubiquitous works like soil conservation, road construction and metal breaking could only be begun. Works like desilting of wells and village tanks, digging up of village tanks were then added to the list. The technical and ministerial wings of the administration were strengthened and supplemented by new recruitment and plans for percolation tanks, check bunds, small irrigation tanks etc. were prepared and put into operation. However, these works also could not go all the way to meet the increasing demand for work and the scheme of community wells was introduced in September 1972. The scheme had two advantages: (i) it could be considered as productive work unlike the metal breaking work or the village road work, (ii) it was possible to open up as many works in a village as the situation demanded. The community well was expected to serve the small and marginal farmer so that it was acceptable on the grounds of social justice as well. Only the earthwork of the well was permitted as scarcity work so

that it was as labour intensive as the soil conservation work. With this addition to the list, the relief works could be continued at the village level till the end of 1973.

There were large variations between different districts in the composition of scarcity works taken up during the drought. Work of canal excavation was taken up only where major and medium irrigation projects were in progress viz. in Ahmednagar, Poona, Solapur, Osmanabad and Bhir districts. The works of minor irrigation like percolation tanks, irrigation tanks, were more concentrated in the Western Maharashtra where there was a greater potential for such works and technical personnel could be mobilized to finalize the plans of work. Village tank and community wells were ubiquitous and these were taken up in all the districts according to the need. Soil conservation works were more concentrated in Marathwada, as there was a considerable quantum of work still to be completed, while the scope was rather limited in Western Maharashtra. The road work, particularly the work on village roads was taken up as per the need to open up relief works while the earthwork of district roads was completed in districts where there were gaps in the 1961-81 State Road Plan and the works were easily accessible from the scarcity-hit villages. Metal breaking centres were opened up where other works could not be easily started because the plans for work were not ready or problems of land acquisition etc.

It was reported that during the period 1971-74, 2168 hectares of area was bunded; about 60 per cent of this was from the Marathwada region. Particularly in Bhir and Osmanabad districts the major portion of the work of bunding was completed. The number of minor irrigation works and percolation tanks taken up was quite large. 4800 such works were started during 1971-73. Of these, 1479 were reported to have been completed by 1974. The rest of the works were at different levels of incompleteness. During the year 1971-72, 874 works of percolation tank, irrigation tanks got started and in 1972-73, 1601 new works were taken up. Work on as many as 2326 tanks commenced after April 1973. It is reported that in the first year, 308 works were completed. The corresponding number was 296 in the second year. In the year 1973-74, 875 works were reportedly completed.

It was noted in a quick survey of selected percolation tanks in Man taluka (Satara district) carried out in March 1976 that the works completed by 1972 were useful as percolation tanks as the construction work was properly executed. In the case of works started during 1972 or 1973 i.e. the peak period of scarcity works, it was reported that the earthen embankments of the percolation tanks were not properly designed or properly constructed because of a variety of reasons. The major problems were (i) lack of adequate equipment for proper consolidation of the embankment so that it does not remain pervious, (ii) non-availability of appropriate material for construction of embankment, (iii) lack of supervision to ensure use of proper material, ramming etc., (iv) hasty designing and planning

leading to faulty construction, and (v) improper location of the tank due to problems of land acquisition. It was noted that when the works were not properly executed, the water in the tank oozed through the embankment and the tank was empty within a month or so after the end of the monsoon, providing little benefit by way of percolation to the wells in the command area.

There were considerable variations between different districts in the number of percolation and irrigation tanks taken up and completed. The highest number of works taken up was in Ahmednagar viz. 828 tanks of which only 188 works were reported to have been completed. In Poona 378 works were started and only 81 works were completed whereas in Chandrapur 237 works out of 332 works were reported to have been completed.

The work on community wells was carried on, on a massive scale between September 1972 and September 1973. In all, work on 56,686 wells was started. Over half of these wells were located in five districts viz. Bhir (7801), Solapur (7352), Sangli (6690), Osmanabad (6068), and Aurangabad (4313). It was reported that the number of successful wells was 17,468. The percentage of successful wells varied between 20 and 40 in most of the districts. Even if water was struck, it was necessary to deepen the well in many cases to ensure an adequate supply of water. The work of construction of the well i.e. the masonry work and water lifting arrangement which involved considerable amount of expenditure was also to be completed. The community wells could serve as a productive asset only when these works get executed. A number of problems had to be resolved in this context. The problem of raising the loan, particularly when there was a group ownership of the well was quite complicated as issues about security to be offered, repayment of loan etc. were not easy to handle. The farmers appeared reluctant to take up the responsibility as there was an expectation that the Government will provide the necessary funds for the construction of the wells.

The community wells were to be located either on the Government land or on land procured as gift from the landowners. The Zilla Parishad was the implementation agency, and the village panchayat was responsible for the execution of the work. It was laid down that as far as possible the wells should be dug near the land of small farmers (MSGO, I, 1973, p. 180). The possibility of creating an asset free of cost resulted in a clamour of claims to locate the well for one's benefit and a number of complaints were received by the Government in this regard. The Government subsequently directed that the community well should not be wrongly located and appropriated by the big landowners. Tahsildars and B.D.O. should take care that no wrongful selection, under pressure, be made. On an average at least two wells per village were suggested to be taken up and a limit of Rs. 30,000 for the total expenditure per well was initially set; this was waived in January 1973 (MSGO, I, pp. 288-90).



The number of community wells and their location were noted for the 73 villages covered in the survey. It was found that in Rahuri taluka the number of community wells per village was relatively small while in other talukas four to six wells were located per village in the majority of the cases; the number was more than ten in the case of some seven villages from Sangola and Ashti talukas. The average number of wells per village, barring the 11 villages with nine or more wells each, worked out to 4.5 in all the talukas, except for Rahuri where the average was about two.

The location of the community wells was examined in relation to the size of land-holding. In Sangola and Sirur talukas a large number of community wells were concentrated on bigger holdings (6+ hectares). It was further noted that in Sangola taluka many of these bigger land owners were important office bearers. In five villages from Sangola taluka community well was located on the lands of the village Sarpanch and in two villages on the lands of the chairman of the primary co-operative society. In Vaijapur taluka such cases were noted in five villages. Forty per cent (21 out of 51) of the wells were located on the Government lands in Vaijapur taluka. Of the total 377 wells located in the 73 surveyed villages 52 were on the Government lands. The community wells were located mainly (i.e. more than 60 per cent) on the medium sized (2 to 4 hectares) farms in Ashti and Rahuri talukas. It was reported that in some cases even though the community well was actually located on the lands of small landholders, the big landowners were among the potential beneficiaries.

Detailed information about the performance of the community wells was collected in Sirur taluka in December 1974. It was noted that the community wells were particularly successful in Kendur village (11 out of 15) and in Kawathe village (6 out of 6). In the remaining eleven villages covered in the study 45 community wells were taken up, and out of these only 13 wells were successful. For the taluka as a whole among the 367 works started 91 were successful, and of these 82 wells were certified by the Groundwater Survey and Development Agency. In the villages studied such certificates were given in the case of 11 wells out of 66 community wells dug. During the rabi season of 1973-74 water from 6 wells (certified) and 6 other wells was utilized, mainly by the bigger landholders by using mobile oil engines. In all 34 hectares of land were irrigated. The crops irrigated were wheat, gram, chillies or vegetables. It was reported that barring one case further deepening of the wells was necessary. In no case the masonry work of the community well was taken up.

#### *Evaluation of Scarcity Relief Works*

The objective of scarcity relief works was to provide as much employment as the situation demanded keeping at the same time the cost of scarcity relief works to the minimum

level. This criterion could be satisfied by earth-work for canal excavation, desilting tank, earth-work for road, in well digging or the soil conservation work. Unskilled workers grouped into diggers (men) and carriers (women) could be employed on such works. The equipment required, the amount of supervision and other expenditure for the execution of the work could be kept low on such works. At the same time it was considered necessary to give certain weight to the future utility of the scarcity relief work since huge amount of labour and other expenditure was involved. The total number of mandays of work involved during the period between April 1972 and December 1973 was about 92 crore and the expenditure incurred amounted to Rs. 212.5 crore.

In the creation of development assets first priority must be accorded to the irrigation works which are likely to reduce the risk of drought and stabilize the agricultural production in the drought-prone areas through the provision of assured water supply. Particularly if the water supply acts as an insurance providing a few life-saving waterings in the case of failure of rains the variability in agricultural output could be lessened to a considerable extent. Major and medium irrigation works with storages located in the heavy rainfall areas, the scarcity areas being watered through canals are the best works for protective purpose in the low rainfall areas so that the normal agricultural life does not get jeopardized due to drought conditions. The minor irrigation works, like the irrigation tanks and wells rank second in the list. These can be useful when there are abnormal delays in the rainfall and provide for supplementary and/or complementary waterings. However, under the conditions of acute drought the tanks or wells may also dry up.

The work of soil conservation and other land improvement measures can help improve land quality and moisture retention. These could be more effective if the minimum necessary water supply is assured. The road construction works can help integration of the isolated villages with the market economy and stimulate commodity production in the village. Here again the agricultural situation is of crucial importance. If the village has assured water supply and can shift to certain commercial crops and diversify agriculture then the market link would be beneficial.

The priority list of the scarcity relief works on the basis of the criterion of long-term utility of the works to the drought-prone areas can be set as follows: (1) Major and medium irrigation - canal works, (2) Irrigation tanks and lift irrigation schemes, (3) Percolation tanks and wells, (4) Soil conservation measures and afforestation, (5) Railway, (6) Roads, (7) Metal breaking centres.

Another criterion that assumes importance in the selection of scarcity relief work is the cost-efficiency criterion. In operating the relief works it is aimed to keep the cost

per unit of employment created at the minimum. The number of mandays of employment per one crore rupees of expenditure incurred for the scarcity relief works was compared for different types of works. It was found that the number of mandays of employment per one crore rupees spent was 53 lakh in the case of soil conservation work and 49 lakh in the case of road work. In the case of metal breaking centre the corresponding figure was 45 lakh and it was 41 lakh in the case of well-digging. For percolation tanks and irrigation tanks where the work on embankment was also included the employment figure was lower viz. 31 lakh mandays per one crore rupees spent. The employment potential for community well will get reduced very considerably if the masonry work is included. Thus, only if the earth work is taken into account there are not considerable variations between the different types of works. However, if the work involved till the proper completion of the work is taken into account then there would be large variations in the employment potential of different types of works. In that case soil conservation and canal excavation work would provide the largest quantum of employment. Thus, from the point of view of utility as well as efficiency the canal works should receive the highest priority. In the case of minor irrigation works the main problem is whether the works taken up could be completed, and more importantly whether the completed works would stand up to rigorous technical standards. Otherwise the wells dug will gradually get filled up and cannot be brought into use, the earth work of roads can get washed in the monsoon, the percolation tanks may not be effective if the work of embankment is not properly executed.

For the review of the scarcity relief works taken up during the drought 1972-73 firstly the types of works started would be considered and then whether they were completed and successfully executed would be examined, so that their contribution to the creation of permanent productive assets in the rural Maharashtra could be gauged.

Detailed information about the distribution of mandays of work or the expenditure incurred by the type of work is not available for the entire period. However, district level information for certain period could be obtained from the various district reports on scarcity conditions prepared from time to time. The pattern of resource deployment is examined for the severely affected districts for which the requisite information could be obtained. During the period April to October 1972, metal breaking work, road works or soil conservation work were the major works taken up and these accounted for over 90 per cent of the employment in Bhir, Aurangabad, Osmanabad, Solapur and Sangli districts. Only in Ahmednagar, Nasik and Poona districts irrigation works - mainly minor irrigation works received greater attention absorbing respectively 21 per cent, 24 per cent, and 33 per cent of the workers employed at relief works in these districts in the period April-October 1972.

The position in March 1973 indicated that increasing importance was being given to the minor irrigation works particularly to the community wells. Still, in the districts of Bhir and Osmanabad the metal breaking centres and in Aurangabad district the soil conservation work was the major single important work. By April 1973, community wells top the list in most of the districts. The shift in resource deployment pattern will be apparent from the distribution of expenditure for the two periods viz. April-October 1972 and April-August 1973 for the five severely affected districts viz. Bhir, Osmanabad, Ahmednagar, Poona and Solapur for which comparable data were available (Table 5.3). The shift was from the ubiquitous road works, soil conservation and metal breaking to digging of community wells. The shares of the former were respectively 47 per cent, 25 per cent and 19 per cent in the period between April 1972 - and October 1972 and were 17 per cent, 7 per cent and 8 per cent during the period April 1973 to August 1973. In the latter period, community wells claimed as much as 41 per cent of the total expenditure. The canal works accounted for only about 5 per cent of the total expenditure throughout the period, while the share of minor irrigation works, like percolation tank and village tank increased from 11 per cent to 21 per cent.

Table 5.3 : DISTRIBUTION OF EXPENDITURE ON SCARCITY WORKS\* BY TYPE OF WORK

*(Per cent Expenditure)*

Type of Work	Period	
	1st April 1972 to 31st October 1972	1st April 1973 to 31st August 1972
	Tank and canal works**	10.1
Community well	-	40.9
Soil conservation	24.8	6.9
Road work	46.5	17.4
Metal breaking	18.6	8.1
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

\* Covers Ahmednagar, Poona, Solapur, Bhir and Osmanabad districts.

\*\* Includes canal work, percolation tank, village tank, irrigation works.

Note : Expenditure on afforestation and miscellaneous works, which was negligible, was not taken into consideration.

Information relating to the types of works taken up and the mandays of employment on different works was collected for the scarcity relief works in the vicinity of the villages surveyed from the six scarcity affected talukas studied. There were considerable variations in the composition of employment between different talukas (Table 5.4). In Parenda taluka, metal breaking works and in Sangola, the road works top the list followed by community wells. In Ashti, the community wells and the metal breaking works each accounted for nearly 30 per cent of the total mandays of employment. In Vaijapur taluka the employment was more diversified; the percolation tanks, the community wells, the soil conservation work and the metal breaking work each absorbed about 20 per cent of the mandays of work. Only in Sirur taluka, the village tanks, and the percolation tanks together accounted for as much as 70 per cent of the total mandays of work.

Table 5.4 : DISTRIBUTION OF MANDAYS OF WORK AT SCARCITY RELIEF WORKS IN THE SIX SURVEYED TALUKAS

Type of Work	<i>(Percentage Distribution of Mandays of Work)</i>					
	Sirur	Rahuri	Sangola	Vaijapur	Ashti	Parenda
Canal excavation	4.2	-	1.1	0.4	-	0.3
Irrigation tank	0.4	-	3.4	2.6	-	-
Percolation tank	30.2	-	20.1	26.4	10.9	4.2
Village tank	41.8	4.4	8.6	5.4	-	-
Community well	4.6	6.4	25.3	20.7	13.9	26.4
Soil conservation	0.9	44.0	1.4	18.5	30.6	8.2
Road work	13.9	25.9	37.2	5.3	6.5	11.6
Metal breaking	4.0	19.3	1.8	20.4	27.5	34.8
Other	-	-	1.1	0.3	-	3.0
All works	100.0	100.0	100.0	100.0	100.0	100.0

The overall pattern of resource utilization for the State as a whole is presented in Table 5.5. The highest ranking work from the point of view of utility viz. the canal work received only three per cent of the total expenditure, despite the fact that there was potential for canal works on major irrigation projects like Ujjani project. In fact in the case of Ujjani project the work on canal excavation is reported to be lagging behind. The irrigation tanks and percolation tanks together received 19 per cent of the total expenditure and 30 per cent of the total amount was spent for well-digging. The road works and metal breaking work, the least useful of all the works, claimed as much as 36 per cent of the total expenditure. The ranking of works that emerges clearly indicates that it was not the utility criterion or a combination of the utility and cost efficiency

Table 5.5 : DISTRIBUTION OF TOTAL EXPENDITURE AND MANDAYS OF WORK ON SCARCITY RELIEF WORKS IN MAHARASHTRA

Type of Work	Percentage distribution		No. of mandays of work per hundred rupees expenditure	Quantity of works started
	Total expenditure	Total man-days of work*		
Canal excavation	3.1	3.7	52.0	1859 km.
Irrigation and Percolation tank	18.8	13.5	31.0	3927 No.
Community well	30.5	29.2	41.3	56686 No.
Soil conservation	11.2	13.9	53.6	1692628 Hect-ares
Road work	22.0	24.7	48.5	40237 km.
Metal breaking	13.7	14.5	45.7	29125000 cum.
Other works	0.7	0.5	37.0	-
Total	100.0 = Rs. 212.54 crore	100.0 = 92 crore	43.2	

Note : \*Estimated on the basis of information regarding average labour attendance at relief works.

criteria but the pragmatic criterion of feasibility of opening works near the villages with little prior preparation or technical supervision that ruled supreme.<sup>32</sup>

The next question is the effectivity of the various works undertaken. The information available in this respect is very scanty and limited. However, it can give certain indications of the utility of different works taken up. It was noted earlier that about 25 per cent of the community wells dug were successful. More wells might prove successful if further deepening work is taken up. However, the major problem is that of completion of the construction of the well. The reported performance in the last two years is not encouraging. The earth-work completed accounts for only about 20 per cent of the total expenditure needed and unless the 80 per cent remaining work which includes masonry work and water-lifting arrangements is completed the wells cannot serve as permanent productive assets.<sup>33</sup>

It was noted above that in the case of irrigation/percolation tanks nearly 30 per cent of the works taken up were completed. It is necessary to study whether the completed works are technically satisfactory. The utility of percolation tanks in augmenting well-water-supply will vary from region to region and only a detailed study can

indicate how far the assets created are productive. At this juncture, only a rough estimate of the fruitful expenditure can be made. The village road work and the work of metal breaking is considered here as non-productive. In view of the sizeable number of unsuccessful and incomplete works, the productive expenditure can be placed around 15 per cent to 20 per cent of the total expenditure incurred.

#### *Wage Rates at the Relief Works*

The prime aim of the scarcity relief works was to provide subsistence wages to the drought affected population. The Scarcity Manual Administration Code of Government of Maharashtra (1972) stipulates that the piece wages at scarcity works/test works should be 90 per cent of the departmental rates for that region. In addition, the maximum daily wage rate is also fixed at Rs. 2.50 for digging or similar work and Rs. 2.00 for carriers (MTN, 1972, p.16). It is stated that a ceiling on daily earnings is laid down so that the drought affected workers do not overwork and the scarcity works do not attract professional workers. The workers at relief works are paid by piece rate subject to the maximum prescribed. It was stipulated by the order dated 30th March 1972 that persons above 21 years of age only should be employed on the relief works (MSGO, I, 1973, p. 106). There was a continuous pressure to modify this rule. The Government regulation dated 31st March 1973 directed that the minors may be employed on the relief works for a period of three months. The maximum wage payable to them was fixed at Rs. 1.25 per day (MSGO, II, 1973, pp. 53-54).

The schedule of rates differed from district to district because of the variations in the departmental rates. It was noticed that in some cases the workers could not reach the maximum of Rs. 2.50 after a full day's work because the piece rates were low. By Government order issued on 5 February 1973 the wage rates and tasks were fixed uniformly throughout the State (MSGO, I, 1973, pp. 280-81) barring the soil conservation work and the work on community wells. There were considerable variations between the different works and different places in the actual wages received. No payment was made for the weekly rest day. The earlier practice of payment of 75 paise as rest day allowance was discontinued from 1st April 1972 (MSGO, I, 1973, p. 106). It was also noted that the workers were finding it difficult to attain the maximum limit because of their deteriorated health conditions. In addition, there were several local level problems like lack of accuracy in measurement and classification, bogus attendance etc. Delays in wage payment and low wage rates was a constant source of complaints, agitations and *morchas*. Particularly the sharp and continuous rise in the prices of foodgrains and other essentials from January 1973 made the wages palpably inadequate and there was a persistent demand for wage increase (See Appendix I). On 13th April 1973, the Government granted a wage increase of 50 paise to the adult workers with effect from 15th April 1973.

This was to be given over and above the wage earned by the worker in accordance with the task rates. The disparity between the maximum wage rates of the diggers and the carriers was also removed and the maximum for both was fixed at Rs. 2.50 from 1st April 1973. For children between 14-18 years of age an increase of 25 paise was given. The maximum piece wage rate in their case continued to be fixed at Rs. 1.25 (MSGO, II, 1973, pp. 61-62). The increase was granted purely on a temporary basis as the Government was anxious that the increase in wages should not act as a disincentive for the people returning to normal agricultural operations. The increase was sanctioned up to 30th June in the first instance and later it was extended up to 14th July 1973.

Information about the actual wage payments is not available through official sources. The data on wages collected through the village level studies carried in the six scarcity affected talukas and available through other surveys, reports etc. are presented here to assess the variations in the wages received. The data on average daily earnings in December 1972 - January 1973 is presented in Tables 5.6 and 5.7 for Sirur taluka on the basis of the information collected through the household survey. The average daily wage rates did not vary significantly between different types of works. However, there were considerable variations between individual earnings, the daily wages ranging from Re. 1 to Rs. 2.50 in the case of male workers and Re. 0.80 to Rs. 2.00 in the case of female workers. The interpersonal variation was rather high in the case of metal breaking as the task was rather new and quite arduous and some found it very difficult to cope up with the task. There were variations in the earnings also due to the differences in the number of hours of work one can put in, because of the time lost in reaching the place of work or the time spent for fetching water, getting the ration etc.

Table 5.6 : DISTRIBUTION OF WORKERS BY DAILY WAGE RATES ON SCARCITY RELIEF WORKS IN SIRUR TALUKA

Daily wage rate (Rs.)	Male workers (Per cent)	Female workers (Per cent)
0.80	-	2.62
0.90	-	0.87
1.00	1.74	1.31
1.10	-	0.44
1.20	0.87	6.55
1.30	-	3.93
1.40	2.17	1.31
1.50	4.78	22.27
1.60	2.61	35.38
1.70	3.48	6.55
1.80	7.39	10.04
1.90	8.26	2.18
2.00	47.40	6.55
2.20	14.78	-
2.40	0.87	-
2.50	5.65	-
	100.00	100.00
	= 230	= 229



Table 5.7 : AVERAGE DAILY WAGE OBTAINED ON DIFFERENT TYPE OF WORKS IN SIRUR TALUKA

	Type of Work			All works
	Metal break- ing	Village tank	Perco- lation tank	
<u>Male Earners</u>				
Average daily wage (Rs.)	2.10	1.97	1.84	1.95
Standard deviation	0.50	0.21	0.28	0.31
Minimum amount obtained (Rs.)	1.00	1.00	1.40	1.00
Maximum amount obtained (Rs.)	2.50	2.50	2.50	2.50
<u>Female Earners</u>				
Average daily wage (Rs.)	1.55	1.57	1.52	1.56
Standard deviation	0.52	0.22	0.22	0.26
Minimum amount obtained (Rs.)	0.80	0.90	1.10	0.80
Maximum amount obtained (Rs.)	2.00	2.00	2.00	2.00

The distribution of workers by daily wages for the two periods viz. before April 15, 1973 and after April 15 is presented in Table 5.8 for Ahmednagar district.

For the period up to 15th April the range was generally between Re. 1 and Rs. 2 in the case of male workers for canal work and metal breaking centres and between Rs. 1.5 and Rs. 2.0 in the case of tanks and road work. The rates for female workers were usually less by 50 paise. In the period after 15th April when the maximum daily wage rate was set at Rs. 3, certain increase in the wage rate was noted for all types of works. The increase was more pronounced for tank work, particularly in the case of female workers, as the rates for male and female workers were equalized at certain works while differential by about Re. 0.25 to Re. 0.50 in the earnings remained in the majority of the cases. The earnings on community wells were noted to be generally on the lower side.

The average daily wage rates were computed at the district level on the basis of the information about the total mandays of work and the estimated expenditure on wage payment for the period April 1972 to March 1973 (Table 5.9). The average daily wage rates ranged from about Re. 0.90 in Bhandara to Rs. 2.0 in Solapur district. The average daily wage rates in the majority of the districts were within the range of Rs. 1.20 to Rs. 1.40. The estimated daily average wage rate for this period worked out to Rs. 1.40 for the State as a whole. In the period April 1973 to July 1973 the estimated average daily wage rate came to Rs. 1.90.

Table 5.8 : PERCENTAGE DISTRIBUTION OF WORKERS BY DAILY WAGES ON DIFFERENT TYPES OF WORKS IN AHMEDNAGAR DISTRICT

Daily Wages (Rs.)	Type of Work							
	Canal Excavation		Percolation and Village Tanks		Metal Breaking		Road Work	
	Male	Fe- male	Male	Fe- male	Male	Fe- male	Male	Fe- male
<i>Period : 1st January 1973 to 15th April 1973</i>								
Up to 1.00	14	25	17	33	18	15	7	19
1.01 - 1.50	38	41	28	22	24	51	21	21
1.51 - 2.00	25	34	11	45	30	34	25	60
2.01 - 2.50	23	-	44	-	28	-	47	-
Average daily wage (Rs.)	1.54	1.30	1.66	1.30	1.60	1.30	1.80	1.45

Daily Wages (Rs.)	Type of Work							
	Canal Excavation		Percolation and Village Tanks		Community Well		Road Work	
	Male	Fe- male	Male	Fe- male	Male	Fe- male	Male	Fe- male
<i>PERIOD : 16 April 1973 to 15 July 1973</i>								
Up to 1.50	33	44	20	26	45	58	9	36
1.51 - 2.00	23	35	36	40	33	28	45	45
2.01 - 2.50	44	21	25	22	22	14	36	19
2.50 - 3.00	-	-	19	12	-	-	10	-
Average daily wage (Rs.)	1.80	1.46	1.96	1.85	1.55	1.36	1.98	1.66

Table 5.9 : DISTRIBUTION OF DISTRICTS BY AVERAGE DAILY WAGE RATE ON SCARCITY RELIEF WORKS (APRIL 1972 TO MARCH 1973)

Daily Wage Rate (Rs.)	District
0.80 to 1.00	Bhandara
1.01 to 1.20	Nasik, Dhulia, Aurangabad, Yeotmal, Akola, Chandrapur
1.21 to 1.40	Poona, Ahmednagar, Bhir, Nanded, Parbhani, Osmanabad, Buldhana, Wardha, Jalgaon
1.41 to 1.60	Kolaba, Sangli, Nagpur
1.61 to 1.80	Thana, Ratnagiri, Kolahapur, Amravati
1.81 to 2.00	Satara, Solapur

Considerable time lag was involved in the measurement of work done at the relief works and in making the wage payments as a result of which the labourers were put to a great hardship. The low rate of daily wages in relation to the high prices ruling in the market, the imposition of a maximum and the absence of a minimum daily wage meant that the amount received as wages was mostly inadequate for subsistence. In addition, the time gaps between the two works resulted in intermittent unemployment and this reduced the total earnings of the worker. For example, it was reported from some villages in Walva and Shirale talukas of Sangli district that the works of percolation tanks could not be taken in time because of the delay in land acquisition. As a result many workers faced unemployment during the month of February 1973. It was reported from Udgir taluka, Osmanabad district that two works of bunding were controlled by one supervisor. The job of laying out the work and the measurement could not be speedily done and as a result the workers did not get work for 2 to 3 days in a week. A number of cases of such administrative lacunae were reported from the villages surveyed from Ashti taluka, Vaijapur taluka and Sangola taluka.

Malpractices in the execution of the work, misappropriations, manipulations in the muster roll and in the measurements reduced the earnings of those who actually worked on the scarcity relief works. It was reported from village A. from Sangola taluka that the extent of bogus attendance was very substantial so that only about half of the amount spent on the relief works was actually paid to the labourers; as a result the amount of work completed and the expenses incurred were totally out of tune. From Patoda, it was reported that the construction work of a well to benefit a village dignitary was done by diverting funds through cutting down the wages to be paid to the labourers on the scarcity relief works. It was reported that misappropriation of material led to the closure of some scarcity relief works in village NC of Ashti taluka. Manipulations in the muster roll reportedly kept the daily wage rate around Rs. 1.25 or less in village M. from Vaijapur taluka.

Only a few cases of the problems faced noted in the villages studies are given above for illustrative purpose. These were not isolated instances. Such complaints<sup>34</sup> were reported from several places (see Appendix I). The protests raised by the workers on relief works helped keep some check on the malpractices. Yet the delay in starting the relief works, misappropriations, the misuse of relief funds and the diversion of funds through manipulations etc. meant that the earnings of the drought-stricken population were pushed down significantly below the provisions made by the Government.

## CHAPTER VI

### REVIEW OF FAMINE RELIEF POLICY

The guiding principles in the formulation of the famine relief policy in India during the British rule can be briefly summed up with the help of a few citations from the Report of the Indian Famine Commission of 1880. "The Government, when it has to deal with calamities such as famines should so frame its measures as to avoid every tendency to relax in the people the sense of obligation which rests on them to provide *for their own support by their own labour*, to cultivate habits of thrift and forethought and as far as possible to employ the surplus of years of plenty to meet the wants of years of scarcity".(IFCR, I, 1880, p. 35).

As regards the manner in which the proper recipients of the public charity can be ascertained, the chief test considered as desirable to enforce was "the demand of labour commensurate in each case with the labourer's power in return for a wage sufficient for the purpose of maintenance but not more (IFCR, I, 1880, p. 36), so that the number of people on gratuitous relief could be kept to the minimum and the danger of people turning indolent by living on public charity avoided.<sup>35</sup>" Further, it was feared that with so much of 'ordinary poverty'<sup>36</sup> prevailing in the country it would be difficult to distinguish it from the 'extraordinary poverty' and distress caused by the famine; besides the employment available in agriculture being seasonal, large number of small cultivators and labourers would opt to work on the relief works during the lean season even in a normal year. The Government was anxious to deter the poor and the seasonally unemployed from flocking to the relief works, and to keep the famine relief expenditure to the minimum. The best way to achieve this goal was to impose strict discipline and stringent work norms and to keep the wage rates low. This was the basic approach in relation to work and wage norms adopted by the Imperial Government.

#### *Nature of Relief Works*

Large, fully supervised public works were preferred firstly because "the obligation to do a full day's work at low rate of wage and to go some distance to work, keeps from seeking relief those who can support themselves otherwise and secondly, the money expended on such works bequeaths permanent benefit to the country".<sup>37</sup> The large public works included extensions and improvements of the existing irrigation systems, the construction of new minor irrigation works, railway earthwork and collection of metal and road works. Small village works, played a supplementary role in giving employment to persons in receipt of gratuitous relief as well as to those who were not strong enough to be sent to regular relief work and to returnees to the villages on the outbreak of epidemics at the large relief works. To illustrate the type of work provided during famines, data

for 1899-1900 famine for the Bombay Presidency are examined. Nearly 50 per cent of the expenditure was devoted to constructing and deepening irrigation tanks; most of these were considered to be of permanent utility. Works like excavation of canal, drainage channel and construction of railway embankment were also of permanent utility. Some of the roads works and metal collection were of temporary or doubtful utility. Of the total expenditure of Rs. 340 lakh spent on famine works Rs. 339 lakh were spent on the major works. About 20 per cent of the expenditure was classified as of temporary utility and 2 per cent of doubtful utility. It must however be noted that the cost incurred for creating the assets during the famine period was more than double the normal expenditure.<sup>38</sup> The public works were found to be much more expensive because the quality of work done by the destitute and often emaciated labourers who were not used to this type of work was quite poor. Yet there was always a hesitation to gainfully employ only the able-bodied persons and put the rest on gratuitous relief as it was considered that gratuitous relief is 'degrading' to the recipient.

The large works were overwhelmingly important till 1902. However, the Indian Famine Commission of 1901 went into the merits of the case and put down the arguments advanced in the favour of village works, as being (a) more economical as they avoid the corruption of subordinate staff on public works and save expenditure on hutting, hospital and other incidental charges (b) more useful (c) less exposed to outbreaks of cholera and epidemic diseases<sup>39</sup> (d) more easy to control (e) less open to objection of (i) interference with the labour market (ii) neglect of agricultural dwellings and stock (iii) hindrance to the early resumption of agricultural activity and (f) less likely to loosen morale and domestic ties. According to the Commission the danger of village works are their attractiveness and the demoralising tendencies that follow an undue popularity; to meet these the Commission suggested "a lower wage, a higher task and no relief to dependents". While in favour of village works as the backbone of the relief system in a district where sufficient number of them can be found, the Commission was not sure that there would be many such districts. Whatever the place be taken by village works the Commission stressed that it is essential that they should be mapped out in advance (IFCR, 1901, p. 22).

In 1907-08 famine, employment was offered nearer home mainly at the village works, and development of aided village works as a means of relief was a new feature of the famine relief. Thus, in the first decade of the 20th century there was a shift from the large public works; village works were now accepted as the basis of famine relief. The shift was possible around this time as the system of supervision was by now vastly improved; the increased cost of closer supervision was remunerated by the greater efficiency of the worker. However, there was a natural limit to the amount of work

available at the village level. Even during the famine of 1899-1900, new methods of employment had to be explored. The aged and infirm were employed in preparing the prickly pear as fodder for cattle, while many able-bodied were hired by the more wealthy cultivators for property improvement. Grant of loans for land improvement to lighten the pressure of unemployment were made and the "plan achieved its ultimate perfection in 1907" (Loveday, 1914, pp. 92-93). The shift of locale at times implied a shift from public works to private works to be supported by the Government through a system of loans, the Government in such a case, being largely absolved of any direct responsibility.

*Post 1947 period :* The distinction between famine or acute distress conditions that necessitate opening of famine relief work i.e. large works employing more than 3000 workers each, and scarcity when only some relief in the form of small local fund or municipal works or expansion of public works or village works, was to be provided, accepted in the earlier Famine-Codes was done away with, and famine was banished from the State by an administrative fiat when in 1954 the Draft Scarcity Manual replaced the Famine Code (MFFC, I, 1973, pp. 86-87) in the Bombay Province.

During the drought of 1972 relief centres employing a large number of workers had to be opened up but all the works could be classified as village works in that they had to be within 5 kms. of the village and did not necessitate opening up of camps, shelter and provision of related facilities. Large public works like irrigation tanks were almost absent from the list; they were now replaced by percolation tanks and ubiquitous community wells. If the distribution of the expenditure on different types of relief works is examined for 1972-73 it is noted that about 30 per cent of the expenditure was accounted for by community wells and about 20 per cent by percolation tanks, desilting of village tanks, etc. About 22 per cent of the expenditure was absorbed by earth work for road construction and repair, 14 per cent by metal collection and 11 per cent by soil conservation work. If the work is evaluated on the basis of its utility, about 45 per cent of the expenditure appears to be of doubtful utility, about 35 per cent of temporary utility. (as *kaccha* roads get washed away or wells not properly built get filled up in a few seasons) and 20 per cent of permanent utility. The expenditure on works of permanent utility is much lower in 1972-73 because of two factors. Firstly, large works of permanent utility for which schemes were already prepared were considered to be the backbone of relief works till 1901 while in the present century the emphasis shifted to village level works. It is difficult to take up at the village level public works on a large scale; only a few works like desilting of village tank or percolation tank, can be opened up at the social level. Even at the individual level, there are but a few works that could be completed employing unskilled labour. Secondly, despite the repeated emphasis laid by Famine Commissions on keeping a plan of action in preparedness to be put into effect under

scarcity/drought conditions, little attention had been paid to the problem. Consequently, works are opened up in an *ad hoc* manner, priority is given to types of works which do not call for any survey, design, etc. and these are often of doubtful utility. The people working at the metal breaking centres or on community wells are fully aware of the futility of their efforts. However, they are put to such hard manual work so that they do not turn 'indolent and disorderly.' No thought is given to alternative avenues of utilising their time and effort such that they do not have to waste their physical energy unnecessarily (which in fact, needs to be conserved during the period of stress).

#### *Wage Scales*

The fundamental principle of famine wage was laid down in para 28 of Government of India's Circular No. 44F dated 9.6.1883 was: "The principle upon which the Government of India has framed the scale of wages embodied in the Code is that the wage should be lowest amount sufficient to maintain health under given circumstance. While the duty of the Government is to save life, it is not bound to maintain the labouring community at its normal level of comfort." (IFCR, 1901, p. 36.)

This fundamental principle was accepted by all the subsequent Famine Commissions. In return to the wage a fair amount of work was to be extracted from the worker.<sup>40</sup> In view of the deterioration of health and stamina of the labourers that reduced diet during famines was bound to produce, the task was fixed at 75 per cent of a day's work in normal times. A shortfall in the daily work from the fixed task was penalised; at the same time provision for certain minimum subsistence wage was made. In cases of wilful default, wage was to be further reduced to the level of a penal minimum which it was admitted was inadequate to maintain a labourer in health for any considerable length of time.

It was maintained that, "on an average a ration of about 1.5 lbs. per diem of the meal or flour of the common coarser grain of the country suffices for an ordinary working adult male....A man doing light work would require about 1.25 lbs. and the ration which consists of 1 pound of flour with a little pulse has been found sufficient to support life in numerous relief houses, where no work is exacted."<sup>41</sup>....On relief works, where a money wage is given the rate of pay should be such as to leave a slight margin above the actual cost of flour so as to allow for the purchase of salt, pepper and other condiments and firewood." (ICFR, 1898, p. 254.) The full and minimum wages were defined as the amounts of money which at the current prices are sufficient to purchase a full or minimum ration.

In practice, the system of fines to be imposed for short work often resulted in workers receiving not the

full wage but the minimum wage or even less.<sup>42</sup> Added to it was the factor of pricing. It was experienced that the 'ruling' prices taken as a basis to work out the cash wage did not keep up with the actual price rise in the market. Consequently, the cash equivalent was often not enough to buy the minimum stipulated grain ration. The payment was made on a weekly basis and in effect the worker had to bear the interest charge levied by the trader; this also cut into his subsistence wages.

One of the knotty problems in the fixation of wages such as to maintain efficiency but to obviate 'over-indulgence' was the problem of the classification of workers. From 1860 up to 1898 "the task was essayed of classifying on the basis of hypothetical efficiency, and graduating wages according to the value accruing from the task corresponding to any particular group, the assumption being partly that the food should bear a ratio to the energy expended and partly that while obviating the danger of laziness the competent would be able personally to support their dependents." (Loveday, 1914, p. 91.)

The system of classification used in the Codes was (1) able-bodied accustomed to the kind of work given, (2) able-bodied not accustomed to the kind of work given, (3) able-bodied but not labourers, and (4) not able-bodied but fit for light labour. In practice the classification proved to be ineffective and created a paradoxical situation.<sup>43</sup> It was realised that a classification on the basis of the nature of task rather than one on the basis of presumable efficiency would be more effective. The Indian Famine Commission of 1898 therefore recommended the following wage scale : diggers - 20 *chhataks* (or 40 ozs.), carriers - 15 *chhataks*, working children - 8 *chhataks*, and for adult dependents (and minimum wage) 12 *chhataks* (IFCR, I, 1898, p. 273). The system suggested was thus a combination of task and piece wages. While adopting this system, it was essential to ensure that employment is offered to the drought-hit people before emaciation sets in and proper provision of supervision is made.

Subsequently the Famine Relief Code of 1912 (Bombay Presidency) laid down the wage scales on public works as follows (BFRC, 1912, p. 23) :

*Class*

- A. Gangers - One pice more than Class B
- B. Diggers - 18 *chhataks* (or 1023 grams)
- C. Carriers- 14 *chhataks*
- D. Working children - 10 *chhataks*

*Dependents*

- E. Adult M - 12 *chhataks*
- F - 10 *chhataks*



*Non-working children*

F.	10-14	-	8	<i>chhataks</i>
G.	7-10	-	6	<i>chhataks</i>
H.	Below 7 but not in arms	-	4	<i>chhataks</i>
I.	Children in arms-	-	3	<i>chhataks</i>

The grain wage scale adopted after independence was about the same as adopted in the 1912 Code. The level of maximum wage was to be fixed in such a way that a family of two earners and three dependents shall be able to purchase the grain allowance specified in the Manual.<sup>44</sup> The actual wage received by the workers was dependent on the work completed in relation to the tasks set out in the Manual for various types of work, subject to the maximum.<sup>45</sup> The maximum limits set were : adults employed for digging - Rs. 1.25, adults employed for carrying and equivalent work - Re. 0.94. The limits were raised to Rs. 1.50 and Rs. 1.25 respectively in 1962 (MBSM, 1966, p. 249). In 1971 the limits were further raised to Rs. 2.50 and Rs. 2.00 in view of the price rise. The minimum wage was discontinued.<sup>46</sup>

During the drought 1972-73 the maximum wage limit was set at Rs. 2.50 for male workers and Rs. 2.00 for female workers. The stipulation that for a family of five persons the scale of daily maintenance should be about 3.75 kg. would have meant a daily wage of Rs. 2.65 per earner at the prices prevailing in August 1972 while the maximum limit set per earner was Rs. 2.25 (averaged over male and female workers) which was not easily reached. In fact the average daily earnings worked out to Rs. 1.40 per worker in the period April 1972 to March 1973. It would have meant daily wages of Rs. 4.65 per earner at the prices ruling in June 1973, while the maximum limit was Rs. 3.00. In addition *sukhadi* was provided at the rate of 200 grams per day per worker from 1st January 1973 (MSGO, I, 1973, pp. 284-85) to 15th April 1973 and thereafter up to 31st July 1973 (MSGO, II, 1973, p. 110) at the rate of 100 grams per day per worker. It was claimed that 200 grams of *sukhadi* represented an additional wage of 50 paise (MSGO, I, 1973, p. 286) per worker. Even taking into account the *sukhadi* distribution the maximum wage rate was below the minimum amount necessary for maintenance by about 25 per cent in 1973.

*Supply of Foodgrains*

"At the same time that we recommend the general principle of absence from interference with private trade in the supply of food to any tract suffering from scarcity, we admit that there are exceptional cases in which the Government may find it necessary to intervene. .... Much caution will be required in every (such) case lest interference should aggravate the evil which it is designed to avert, and have the effect of preventing traders from entering market while it is being operated by the Government." (IFCR, I, 1880, p.52.) The Famine Commission maintained that the "surplus produce of India (put at 51 lakh tons, the estimated total

production being put at 515 lakh tons and the foodgrains requirements worked out on the basis of about 200 kilograms per person per annum) taken as a whole at present furnishes the means of meeting the demands of any part of the country likely to suffer from famine at any one time and that the Government should not go in for storage of foodgrains as it would be a costly operation and it might have disastrous effect on private trade and will produce most fatal effects on the prudential habits<sup>47</sup>" (IFCR, I, 1880, p. 54).

The Government accepted fully the above policy advocated by the majority members of the Famine Commission.<sup>48</sup> The policy enunciated in 1861 in favour of non-intervention in private trade in foodgrains and in 1874 against the prohibition of exports of foodgrains was continued by the Imperial Government till the end of their rule. This resulted in much suffering<sup>49</sup> particularly when the famines were widespread.

The policy was modified by the Essential Commodities Act, 1955. In 1972-73 the State Government took such measures as (1) banning export of foodgrains from the State, (2) setting maximum limit of stocking with traders, mills, etc., (3) requirement to display prices, (4) promulgation of Maharashtra Scheduled Articles (Bombay Rationing Area) Price Control (October 1973), which laid down maximum wholesale and retail prices in respect of 22 essential commodities. However, it was contended that adequate civil supply staff was not available at the state and the district level to enforce the price control measures. The price of the staple cereal viz., jowar rose steadily and the price index was 225 in July 1973 with price level of June 1972 as 100. The supplies available through the fair price shops authorized for the distribution of foodgrains, sugar, etc., did not meet even 20 per cent of the requirements. The workers had to depend mainly on the private supplies. It was reported that there were periodic shortages particularly in the remote villages and the sharp rise of prices in 1973 made it impossible for the workers to obtain a subsistence ration. On an average they could obtain about 500 grams of cereals per head per person in 1972 but the average fell below 450 grams during 1973.<sup>50</sup> As the Government could not effectively intervene in the foodgrains trade the supply situation and the price level were virtually controlled by the private trader. The trade margins and profits through black-marketing increased to the advantage of the trading class during the period of the shortages of essential commodities while the drought-affected population had to bear the brunt.

In sum, the basic approach to famine relief, viz., providing for succour as a temporary measure during the period of acute scarcity condition, the nature of relief works viz. works temporarily opened up, involving hard physical labour, the wage policy viz. adoption of lower than the normal wage rate as a deterrent and lack of

effective control over the foodgrains trade remains practically unaltered. This can be explained by the fact that the major problems of the Indian economy viz. the existence of about 40 per cent of the rural population which is not able to obtain a subsistence income even in normal times, massive seasonal unemployment among the rural workers and the precarious food-balance persist despite the significant progress in irrigation, agricultural production through improved seeds and agronomic practices, etc., and the development of infrastructural facilities. The control of epidemics by the 'forties, the vastly improved health and medical service network, the improvement in drinking water supply have helped eliminate the deaths which occurred on a massive scale during the famines in the 19th century. Famine does not mean starvation, epidemic and death. But it still means serious accentuation of the problem of lack of work, lack of cash and lack of foodgrains. Only a long-term policy that effectively combats the problems of underemployment, low earnings, heavy dependence on agriculture could help reduce the numbers affected and the acuteness of their plight in the event of a drought. In the meantime, it must be restressed, that if a drought recurs, the present policy of dealing with the problem in a very routine manner needs to be changed.

#### *New Approach to Drought Relief*

The Task Force on Integrated Rural Development appointed by the Planning Commission reviewed in their report the existing approach to the operation of relief works and concluded, ... "At present the approach being taken by the States for drought relief is essentially *ad hoc*. Relief works are prepared in a hurry. The large amounts spent on relief expenditure do not confer much benefit of a permanent nature to the economy of the affected area." (IADD, 1973, p. 76.) The Task Force recommended, "In our view, the essential feature of the necessary reform will have to be integration of development and relief planning of areas usually affected by droughts. Specific plans for meeting the drought situation should be drawn up and included in the Fifth Five Year Plan. These plans of development must reflect a long-term strategy for integrated development of these areas. Once such area plans ... are included in the Fifth Five Year Plan a system of telescoping these plans when drought hits the area should be possible and release of central assistance earmarked for a later period of the plan could be made more or less automatic for meeting the situation.<sup>51</sup> ... In case the calamities are exceptionally severe and the relief employment needed exceeds the extent of productive employment that can be locally offered, ... we must not resist ... shifting of people to relief camps in areas where major state or national construction projects are under execution." (IADD, 1973, pp. 76-78.) It is suggested that the infructuousness in relief employment that occurs today because of the lack of provision of 'material component' and also lack of provision for the completion of

the works taken up during the scarcity period, once the relief operations are over, can be avoided as the works would form an integral part of the plan programme.

The execution of the normal plan programmes as scarcity relief work would obviously mean three to fourfold increase in the expenditure for providing a given number of mandays of work, since the works would include not only the highly labour intensive unskilled earth-work, but also the construction and other work involving skilled labour and considerable material components. It will be necessary to ensure the availability of not only the requisite financial resources, but also of the physical resources - the equipment and the material inputs and the necessary technical skills to speed up the works. The workers who attend the relief works are by and large unskilled workers. Training of the workers in the necessary skills demanded by the new or the ongoing plan programmes will have to form a *necessary* part of the relief programme.

The local level works in the drought-prone areas can include mainly a variety of minor irrigation works, afforestation programme, improvement of public health facilities, particularly the water supply schemes while at the State level, works of canal excavation, forest and pasture development, river training, road works, etc., can provide employment to a large number of workers. For the State level works, all the responsibilities that go with the operation of large public works have to be accepted. At present, it is stipulated that the relief works be located within a distance of about 5 kms. of the affected villages, on the plea that the normal life of the rural community should not get affected. This overlooks the fact that a large number of poor cultivator and agricultural labour families migrate seasonally every year to work on sugarcane farms, cotton picking, harvesting of wheat, etc., and this is a part of their routine life. The opening of large public works entails the responsibility to organise labour camps where provision for appropriate shelter, water supply, daily necessities, etc., has to be made. Precautions against epidemics have to be taken. The works once started must be carried to the stage of completion<sup>52</sup> even if the immediate pressure of scarcity relief works eases so that a permanent asset that strengthens the productive capacity of the area is created.

There would still be a large number of adults from the working age-group who would not be able to effectively work on the various types of public works because they are not habituated to this type of work. Alternative skill creating programmes which would be of permanent value to the workers, in the sense that they can put these skills to gainful use particularly during the lean season, have to be kept in readiness. Plans for the ways and means for making arrangements for the personnel needed for training the workers have also to be made in advance. The nature of programmes will vary from area to area depending mainly on

the local resource development potential of the region. For example, in the hilly tracts of the scarcity region, preparatory work for plantation of agave, babul, etc., on hill slopes and waste lands would be possible.

The other productive works that can be taken up as relief works would be partly determined by the type of raw materials which would be locally produced. If there is a lack of local material which can form a basis of processing/manufacturing activity, resort may be taken to crafts like cotton spinning on *takli* and knitting or weaving of the yarn into sacks and coarse cloth for packing and packaging. The training necessary for the development of the requisite skills, designing of the products and their standardization, raising of the basic raw materials locally and supply of other inputs and the marketing of the product have to be provided for as an integral part of the programme. The Government can take up the responsibility of purchasing the major portion of the production for meeting their departmental needs. Part of the time can be also used for educative and cultural developmental purposes. The help of college students in the vicinity can be mobilized for simple training in mensuration, accounting, properties of soil, water, and discussions on subjects like the working of the economy and society, science and superstitions, nutrition, sanitation and health, etc.

It would be useful if the implications of a new approach to relief programme are worked out and the high priority accorded today to the administrative ease is replaced by the consideration of the relevance and utility of the relief programme to the drought affected people working on the programme.

It is unfortunate that after the experience of the widespread drought of 1972, a need to rethink the entire issue of relief policy is not realised and the Government continues to follow the path laid down by the British administration. Even though the need to change the approach is restressed Committee after Committee the Reports get shelved once the shadow of the drought passes; when the calamity recurs the relief operations get pressed into operation in a routine manner according to the letter of the "Scarcity Manual". It is high time to change this 'pragmatic' policy.

## CHAPTER VII

### PERSPECTIVE ON DROUGHT MITIGATION

"The basic issue is whether the State Government is aware of the acute problem of drought in the State. If there is a realization of the problem then is there a specific and time bound programme prepared to alleviate the situation? And if the plan is ready why not begin?"

"The fact is that there is no comprehensive programme prepared by the Government. When the drought situation assumes serious dimensions the Government sets about distributing *tagai* loans, fodder etc. and starts small relief works on *ad hoc* basis for providing short-term work. These are measures of mere temporary assistance. These in no way help in giving redress from the drought on a long-term basis. The British followed a similar policy. Schemes of irrigation project are taken up in an *ad hoc* manner but there is no total long-term programme." (Tupe, 1954, p. 12.)

Twenty years after the drought of 1952-53 a severe drought revisited Maharashtra State in 1972-73. Was the state of affairs different in 1972-73 as compared to the 1952-53 situation? Even in the year 1976 is there a comprehensive and time-bound plan of irrigation included in the State Plan to be put into operation? There are attempts to expedite some of the on-going works and to add a few new schemes of irrigation but the approach continues to be piecemeal.

If the drought conditions are moderate, those are dealt with through the routine channels of administrative machinery. If the situation is grave high level administration is harnessed, new works are organized, money is pumped in a large measure and once the rains bring the agriculture to life the entire problem gets shelved into a Report.

During the drought 1972-73 the State took pride in opening up a large number of small relief works and giving wages, loans etc. to the drought affected population. But it was only a relief operation. During the period April 1971 to December 1974 as much as Rs. 266 crore were spent in Maharashtra for the purpose of drought relief. The amount spent increased from Rs. 40 crore in 1971-72 to Rs. 83.8 crore in 1972-73 and to as much as Rs. 141.9 crore in 1973-74 (Subramanian, 1975, p. 110). It may be noted that an amount of comparable magnitude viz. Rs. 310 crore was expended during the period of about twentyfive years (1950-1973) for major and medium irrigation projects in the State. The problem of long-term improvement of agriculture so that a large number of rural people do not remain under-employed year after year and get thrown into total unemployment in bad years is not yet being squarely faced.

*Agricultural Development*

In Maharashtra there is no comprehensive policy for total agricultural development. There are a large number of programmes like the schemes of irrigation, development of new varieties, supply of fertilizers, extension of credit etc. Even in the case of any single department e.g. irrigation, a comprehensive and time bound plan for the development and utilization of surface and groundwater resources of the State is not prepared.

For preparation of a comprehensive irrigation plan, the State will have to be divided into three broad zones viz. (i) Heavy rainfall areas, (ii) Moderate and assured rainfall areas, (iii) Low rainfall areas.

The first zone will cover the Konkan districts, the Ghat region and the eastern part of Vidarbha viz. Chandrapur and Bhandara districts and parts of Nagpur and Wardha districts. The rainfall ranges from 1250 mm to 3000 mm in this zone. The second zone with rainfall ranging from 750 mm to 1250 mm will include the remaining part of Vidarbha viz. Akola, Amravati, Yeotmal, Buldhana districts, Nanded, Parbhani and eastern part of Aurangabad, Bhir, Osmanabad districts, Jalgaon and western part of Dhulia and Nasik districts. The third zone will cover the western part of Marathwada, Western Maharashtra barring the Ghat region and eastern part of Dhulia and Nasik districts.

Each of the three zones covers about one third of the area of the State. In the Konkan and other hilly areas two types of measures are important. The problem of soil erosion is very serious in these areas. Integrated scheme of trenching, *nala* training-bunding from the hill top to the valley and a comprehensive programme of afforestation are of vital importance to check soil erosion and stabilize soil and to reduce the rain-water run off. This alone will help bring the land under productive use. The dug wells can be used in this area for ensuring water supply in case of untimely break in the rain and for growing rabi crops like pulses. Use of tanks as supplementary source of irrigation is widespread in Chandrapur and Bhandara districts. Proper maintenance of the tanks has to be ensured and the irrigation network has to be appropriately strengthened.

In the medium rainfall zone the water resources can be used as supplementary to the rains mainly for growing rabi crops. The water storages through surface and underground resources can be used during the kharif season in case of shortage of rains, delay in rains etc., so that the kharif crops are not adversely affected due to the shortage of water. If the rainfall is normal the irrigation water can be used for rabi crops. In this zone, it is best to take the decision regarding the use of irrigation water in October and water supply should not be generally committed in April, so that the kharif crops are fully secured. Cultivation of sugarcane in this zone in tracts with black

cotton soil which is prone to water logging, is likely to create problem of soil impairment. Considerable expenditure would be involved to bring the damaged land back into cultivation. Cultivation of sugarcane in black cotton soils will have therefore to be taken up with great caution. Adequate arrangements for drainage must precede the extension of irrigated agriculture in this zone.

In the scarcity zone, the land surface under cultivation is larger than the water resources available in the zone. A minimum of two feet water is needed for crop cultivation. This can be supplied through a chain of storages in the high rainfall areas and development of a grid of canals so that the water supply in a given water basin could be augmented. Within the scarcity zone an integrated scheme which includes small bunds, check dams, wells, afforestation etc. for ensuring soil conservation, retention of moisture, storage of water within the limits of the resources available has to be formulated and put into operation systematically (see Appendix II). It is important to spread the water available over as large an area as possible resorting to lifting of water wherever necessary so that larger area could be brought under irrigation command. This will ensure larger average yields (Table 7.1) and considerable reduction in the year to year fluctuations in the production in the drought-prone areas. The canal water will have to be supplied for two seasons or eight months so that the heavy losses involved in the summer months because of evaporation and seepage could be avoided. It is important to have a network of wells in the canal

Table 7.1 : AVERAGE YIELDS OF IRRIGATED AND UNIRRIGATED CROPS

Crop	Average yield in quintals per hectare	
	Irrigated	Unirrigated
Bajra :		
Local	-	3.01
Hybrid	7.0	-
Jowar :		
Kharif	10.0	7.15
Rabi	17.0	4.35
Hybrid	30.0	-
Kharif Pulses	11.6	4.26
Groundnut		
Kharif	14.0	4.76
Chillies	16.0	6.73

Source : Sukthankar Committee Report, 1973, p. 139.



command area to help drainage and perennial crops can be grown only where the underground water supply is ample. In the normal year the water impounded within the zone and that supplied through canals from outside storage would be adequate to grow three crops in two years. And even in a drought year, if a comprehensive plan of major, medium irrigation and moisture conservation schemes is put into operation the risk of drought would be considerably reduced.

The need to distribute the impounded water over as large an area as possible has been stressed by the Irrigation Commission and accepted in principle by the Government. However, if the various irrigation projects in the Krishna or the Bhima valley are examined it will be noted that the projects assume an average dose of about 60" of water. Sugarcane crop occupies 8 to 15 per cent of the irrigated area in the crop pattern envisaged. Once a substantial provision for sugarcane is made more water than is originally provided for, tends to be used up for sugarcane cultivation. This leads to further reduction in the irrigated area.<sup>53</sup> The reasons put forth for the provision of a large average dose of water are that if a small dose is provided it will entail increase in the length and width of canal, and lifting of water at certain points to reach larger area and this would result in an increase in the total cost of the project. In such a case the cost-benefit ratio may not work out to be higher than 1.5 which is crucial to get sanction for the project from the Centre. On this plea the emphasis on sugarcane cultivation and restriction of the benefit of irrigation to a smaller area is perpetuated.

It is important for the development of scarcity prone tract in the State to bring about a basic policy change in the utilization of canal water. In the new irrigation projects the canals must be suitably designed and the necessary arrangements for lifting of water must be made so that the water would be spread over as large an area as possible. The average dose of water can be reduced to 18" instead of 60". The average water requirement in kharif season can be put at about 12" and that in rabi season at 24". If water is made available to 50 per cent of the irrigable command in kharif season and 50 per cent in rabi season the 18" dose will irrigate about thrice the area that is envisaged to receive irrigation today (Chaphekar, 1973).

As water is the most crucial agricultural input<sup>54</sup> it is advisable to plan the utilization of the scarce water resource in the drought-prone areas such that the benefit in terms of production to a unit of water used is maximized. The cropping pattern for the irrigated command area will have to be worked out on this criterion. The net return to a unit of water is noted to be quite high for potato, onion and chillies; however the water requirements of these crops are relatively more. Among the crops with moderate water requirements, the net return to a unit of water is

relatively high for pulses, followed by high yielding varieties of wheat, groundnut, hybrid jowar (Table 7.2).

Table 7.2 : WATER REQUIREMENTS AND YIELDS OF SELECTED CROPS

Crop	Total water requirements (Metres)	Yield in Quintals		Net Return (Rs.)	
		Per Hectare	Per Hectare Metre	Per Hectare	Per Hectare Metre
Hybrid Bajra	0.450	7.0	15.6	486	1080
Jowar (Rabi)	0.450	17.0	37.8	525	1170
Hybrid Jowar (Rabi)	0.525	30.0	57.1	761	1450
Wheat (HYV)	0.825	20.0	38.1	1112	2120
Mung (Kharif)	0.350	12.0	34.3	715	2043
Groundnut (Kharif)	0.550	14.0	25.4	944	1716
Sunflower (Rabi)	0.525	12.0	22.9	1062	2023
Chillies	0.750	16.2	21.7	2473	3297
Potato	1.050	200.0	190.5	4300	4100
Vegetables (Rabi)	1.125	92.0	81.8	1768	1570
Onion (Rabi)	1.275	275.0	215.7	4331	3400
Long Staple Cotton	1.050	20.0	19.0	1950	1860
Sugarcane (Pre-seasonal)	4,050	1250.0	308.6	3890	960
Sugarcane (Adsali)	4.275	1500.0	350.9	4870	1140
Banana	4.800	500.0	104.2	6992	1460
Grass-Blue Panic	0.300	300.0	1000.0	1350	4500

Source : Sukthankar Committee Report, 1973, pp. 168-69.

The cultivation of cereals and pulses would rank high if the return to the unit of water in terms of production is considered. If provision for perennial irrigation is not made on the canal system and the water is supplied only for eight months, implementation of a cropping pattern that emphasizes production of foodgrains on canal irrigation should not be difficult.

It is estimated that in the Bhima basin if all the projects as per the Master Plan are completed assuming the crop pattern currently adopted about 7.5 lakh hectares would receive the benefit of irrigation. However, with the reduction of the dose to 18" and provision of lift up to 200', it will be possible to bring nearly 20 lakh hectares under irrigated agriculture. In Krishna basin the irrigation projects viz. Dhom and Borkhal on Krishna, Kanher on Vena and Nandoli on Warna are likely to provide benefit mainly

in the command areas of the sugar factories like Krishna, Sahyadri, Satara, Warna, Panchaganga etc. However, if a provision to lift the water is made the scarcity prone talukas viz. Khatav, Koregaon from Satara district and Khanapur, Jath, Miraj and Tasgaon from Sangli district will receive substantial benefit. A water grid of Krishna-Koyana-Agrani-Yerala can be created through lifting arrangements at appropriate points and the water can be distributed over a larger area. In Krishna basin the area irrigated can be increased to 9.3 lakh hectares as against 4.5 lakh hectares as contemplated today. If the Bhima basin, Tapi basin and Godavari basin (excluding Vainganga) are considered together it is estimated that 56.6 lakh hectares in the place of 22.6 lakh hectares provided for today could receive the benefit of irrigation (Maydeo, 1973).

The increased capital and maintenance costs could be met if consolidated assessment of the irrigable command area is made and water charge is collected from all the potential beneficiaries. Once the water supply is assured, the sowing, fertilization etc. can be done at proper time as the cultivation schedule will not be dependent on the vagaries of rainfall. Such timely agricultural operations make for a substantial increase in the yield and also stabilize the yields. Water rates varying within the range of 5 to 12 per cent of the gross income from the crop, the upper limit being applicable to cash crops, as recommended by the Irrigation Commission (ICR, I, 1972, p. 268) could yield a return of about Rs. 80 to Rs. 200 per hectare (Maydeo, 1973). As a result the irrigation schemes would become viable, so would be the cultivation of foodgrains and other food crops.

While it is very important that the irrigation potential created should be stretched as far as possible, the realization of the productivity potential of the irrigation facility created is equally crucial. The control over quantity, timings, frequency and efficiency in the use of water i.e. rational water management can help increase considerably the effective use of irrigation water. In view of the different water requirements in terms of frequency and dose, block cultivation of specific crops on canal irrigation can make for efficient water management. In this context crop planning of a large area unit becomes essential. Appropriate machinery for proper advice regarding crop pattern suitable under given soil conditions and water availability as well as proper water application to different crops has to be the integral part of the irrigation development programme so that the benefit of irrigation in terms of improved crop pattern, greater intensity of cropping and higher yields could be achieved. Provision of water and the proper utilization of water have, thus, to go hand in hand to effectively improve the agriculture operated today under dry conditions.

In regions where canal irrigation cannot be extended and the rainfall is very low and uncertain it is necessary to explore alternative uses of land. Instead of depending

on agricultural crops which give very low and uncertain yield in these areas, emphasis on cultivation of grasses and some forest trees and activities like sheep rearing can be taken up.

It is equally important to put in research effort to develop varieties that can give stable yields under minimal water supply, or can withstand better the fluctuations in water supply. Development of improved inter-cropping, rotation, fertilization practices to ensure higher yields as well as alternative land utilization pattern relevant to scarcity zone also demands considerable research effort.

The major impediment in the planning and execution of the plan of land and water resource utilization is the scattering of the land into thousands of individual holdings. The small fields surrounded by bunds make for severe sheet and gully erosion. It is important to remove these bunds, and reshape the land according to topography, reclaim the gullies, provide for grassed waterways to convey the runoff water into tanks or outlets so that the quality of soil can be restored and proper drainage ensured. The adoption of optimum cropping pattern according to land capability would be easier if planning of the village land as a unit is possible. Today the water resources are unevenly tapped and are often used wastefully. Total planning of the water resources and its optimum utilization could be possible again if the area of a sub-watershed can be treated as a unit of planning.

Comprehensive planning is thus called for at two levels. At the State level a time bound Master Plan for the full utilization of all the water resources, surface as well as underground, has to be prepared. At the local level land development and water utilization plans have to be prepared for each watershed. Suitable crop pattern and cultivation schedule will have to be worked out for the sub-watersheds. Strict adherence to the plans at the village level will have to be ensured. For implementation of a rational land use and water utilization plan and scientific management of agricultural production two prerequisites have to be satisfied. Firstly the planning unit, the land surface and the water resources, has to be determined with reference to topographical and hydrological characteristics and not by the private plot boundaries. This implies that for the formulation and implementation of a rational land use plan pooling of the land resource is necessary. Secondly, for the implementation of the necessary measures of soil conservation, water storages, land shaping, drainage etc. the large variations in the individual resource position act as a constraining factor; for instance the small farmers cannot mobilize adequate resources for capital investment needed for land and water resource development while the large farmers may fritter their resources in reclaiming the land turned saline due to sugarcane cultivation—the cultivation of sugarcane being taken up, to begin with, without adequate drainage arrangements and

without considering the long-term mal-effects. The necessary capital investment can be made if the total land and water resources are considered together. The allocation of land for forest and pasture development that would be necessary in the interest of soil and water conservation and the land capability will also be possible only if the land resources are pooled. Otherwise the individual farmer will not surrender his land for such uses. So also the crop planning, the application of proper dose of water, pesticides etc. can be effectively executed when the land is worked in blocks. Pooling of land resources<sup>55</sup> is thus a pre-requisite for the scientific management of agriculture. Once scientific plans of land and water resource use are put into operation the risk of drought would be considerably reduced over time. In case there is a serious deficiency in the rainfall in certain areas, and the population is badly in need of employment, the workers can be provided with employment in suitable ongoing land development or irrigation works. Once a massive plan of works is in operation and the resource development plans are ready it should not be difficult to expedite the work in case of need. The operation of Employment Guarantee Scheme can also become meaningful if it forms a part of the total land and water development plan. The training of the population working on the Employment Guarantee Scheme or seeking work because of drought situation should also form an integral part of the relief operation. This will help improve skill levels and the labour available during the lean season could be deployed according to the demand of the ongoing works instead of staring non-productive works on the ground that the workers are unskilled.

The adverse impact of weather cycle can thus be mitigated through (1) minimizing the amplitude of fluctuation in yields through protective irrigation in the drought-prone areas. The criteria for use of water in these regions should generally be maximization of the returns in terms of crop production to the unit of water used, (2) shifting to livestock based activities and non-agricultural activities in the critical scarcity-ridden areas which cannot be conerved with protective irrigation, (3) utilizing the available water resources in other areas to increase the yields of foodgrains and essential crops.

The problem of drought has to be viewed as a part of the total agricultural situation in which problems of under-employment, low yields, low incomes and under-nourishment are widespread. Comprehensive resource planning covering the major part of the agricultural population is urgently called for so as to increase the number of days of employment and improve agricultural productivity. This will lead to an increase in the consumption levels. This in turn, will enhance the capacity of the rural population to withstand a calamity like drought, both because it would be possible to provide for some insurance against bad years and also because the severity of drought will decrease progressively because of the variety of protective measures

taken. In evolving the programme for scarcity tracts the potential for resource development within the region as well as the problem of provision of the essential services needs to be considered. The villages which have chronically to be supplied with drinking water by putting tankers into service during the summer months or the villages where the water supply schemes work out to be exorbitantly costly may be relocated in areas with better water facility. Areas where provision of irrigation water supply is not feasible and the rainfall is very low and uncertain shift from agriculture to other occupations within the area if possible or at times outside the area has also to be taken into consideration. The problem of drought cannot be effectively handled through *ad hoc* schemes and policy measures but has to be solved on the total canvas of economic development — agricultural, livestock, forest, industrial — of the State as a whole.

APPENDIX - I

THE ISSUES AND AREAS OF PUBLIC AGITATIONS DURING THE DROUGHT PERIOD 1972-73

Month & Year	Nature of Issue													
	Demand for Relief Work		Demand for Specific Relief Works		Demand for Declaration of Scarcity Conditions		Demand for Timely Wage Payment		Demand for Increase in Wages		Malpractices at Relief Works		Demand for Increase in Food-grains Supply	
	District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka
September 1972	A'nagar	Newase Barshi	Kolhapur	Kagal	Belgaon	Chikodi	Solapur	-			Poona	Khed		
	Satara	- Phaltan					A'nagar	Newase*			A'nagar	Shri-rampur		
October 1972	Satara	Koregaon Karad*	Poona	Purandar	Aurangabad	Jalna	Solapur	North Solapur	A'nagar	Shri-rampur				
	Satara		Sangli	Walwa	Sangli	Walwa	Satara	Karad	Solapur	North Solapur				
November 1972	Solapur	Mohol	Poona	Sirur			Solapur	North Solapur			Solapur	All Talukas*		
							Sangli	Walwa			Solapur	Pandharpur		
			Poona	All Talukas							Solapur	South Solapur		
December 1972	Satara	Khatav All Talukas	Dhulia	Dhulia	Satara	Javali	Satara	-	Poona	Khed	Nasik	-	Satara	Phaltan
	Kolhapur				Satara	Wai	Nasik	Mandgaon Sangamner	Satara	Phaltan	A'nagar	Rahuri		

(Contd...)

APPENDIX - 1 (Contd...)

Month & Year		Nature of Issue													
		Demand for Relief Work		Demand for Specific Relief Works		Demand for Declaration of Scarcity Conditions		Demand for Timely Wage Payment		Demand for Increase in Wages		Malpractices at Relief Works		Demand for Increase in Foodgrains Supply	
		Areas from which reports appeared													
		District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka
January	1973	Nasik	Chandwad	A'nagar	Shri-rampur	Kolhapur	All Talukas	Solapur	All Talukas	Solapur	All Talukas	Solapur	All Talukas	Aurangabad	Jalna
		A'nagar	Rahuri					A'nagar	Shri-rampur*	Osmanabad	"			A'nagar	Shri-rampur
February	1973	Sangli	Walwa	Kolhapur	-			Kolhapur	Bavada*	Nasik	Peth	Nasik	Peth	Satara	Khandala
				Sangli	Walwa			Nasik	Peth	Satara	Koregaon	Nasik	Niphad	Sangli	Walwa
								Sangli	Walwa	Satara	Khandala	A'nagar	Sangamner		
March	1973	Sangli	Miraj	A'nagar	Shri-rampur					A'nagar	Karjat	Kolhapur	Hatkanangale		
		Kolhapur	Hatkanangale	Sangli	Tasgaon					Poona	Sirur				

APPENDIX - 1

(Contd...)



Month & Year	Nature of Issue											
	Demand for Relief Work		Demand for Specific Relief Works		Demand for Timely Wage Payment		Demand for Increase in Wages		Malpractices at Relief Works		Demand for Increase in Food-grains Supply	
	Areas from which reports appeared											
	District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka
April 1973	Kolhapur	All Talukas*	Sangli	Miraj*			Solapur	Sangola	Sangli	Miraj*	Kolhapur	All Talukas
					Kolhapur	Hatkan-angale	Kolhapur	Hatkan-angale	A'nagar	Jamkhed	Akola	Washim
	Solapur	Sangola			Kolhapur	All Talukas			Solapur	Pandharpur	Nasik	Sinnar
	Sangli	Walwa							Poona	Khed	Nasik	Nasik
									Solapur	Madha	Nasik	All Talukas
											Bombay	-
											Nagpur	-
											Wardha	-
											Auranga-	-
											bad	-
											Poona	Khed
											Poona	-
											Sangli	Miraj
May 1973	A'nagar	Sangamner	A'nagar	-	Kolhapur	-	Poona	-	Sangli	-	Poona	Khed
	Satara	Phaltan	A'nagar	Sangamner	Solapur	North Solapur	Satara	-	Belgaon	-	A'nagar	Kopar-
					Osmana-	Latur	Solapur	-			Satara	gaon
					bad	-	A'nagar	-	Solapur	South Solapur		Phaltan
	A'nagar	Pathardi			Poona	-	A'nagar	Kopar-	Solapur	North Solapur	A'nagar	Sangam-
	Nasik	Chandwad			A'nagar	Shri-rampur	Nasik	Sur-	A'nagar	Kopar-		ner
								gana*		gaon		

(Contd...)

APPENDIX - 1 (Contd...)

Month & Year	Nature of Issue											
	Demand for Relief Work		Demand for Specific Relief Works		Demand for Timely Wage Payment		Demand for Increase in Wages		Malpractices at Relief Works		Demand for Increase in Food-grains Supply	
	Areas from which reports appeared											
	District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka
May 1973	Kolhapur	Hatkan-angale					Sangli A'nagar	Tasgaon Jankhed	Nasik	Yewale	A'nagar	Rahuri
											Nasik	Surgana
											A'nagar	Jankhed
											Poona	Bara-mati
											Poona	-
											Satara	-
											A'nagar	-
											Solapur	-
											Akola	-
											Auranga-bad	-
											Dhulia	-
June 1973	A'nagar	Shrirampur	A'nagar	-	Solapur	North Solapur	Solapur	North Solapur	A'nagar	Shrirampur	Osmanabad	Kalamb
	Satara	Man			A'nagar	Shrirampur	A'nagar	Sangamner	Nasik	Yewale	Nasik	-
	Satara	Phaltan			Osmanabad	Kalamb			Nasik	All Talukas	Satara	-
	Kolhapur	Hatkan-angale							Satara	Phaltan	Akola	-
	A'nagar	Kopargaoon							Nasik	Malegaon	Dhulia	-
	Poona	Mawal							Solapur	North Solapur	A'nagar	Sangamner
									A'nagar	Shrirampur		
									Akola	Balapur		
									Akola	Murtizapur		
									Sangli	Miraj		

APPENDIX - I

(Contd...)

APPENDIX - I (Contd...)

Month & Year		Nature of Issue													
		Demand for Relief Work		Demand for Specific Relief Works		Demand for Timely Wage Payment		Demand for Increase in Wages		Malpractices at Relief Works		Demand for Increase in Food-grains Supply		Anti-price Rise Demonstrations	
Month & Year		Areas from which reports appeared													
		District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka	District	Taluka
July	1973	Sangli	Tasgaon Akola	Sangli	Miraj			Sangli	Miraj	Solapur	Mohol*	Poona	Khed		
		A'nagar								Solapur	Karmale	Poona	-		
										A'nagar	A'nagar	Bombay	-		
												Solapur	-		
Aug- ust	1973	A'nagar	Sangam- ner			Satara	Phaltan			A'nagar	Shev- gaon	Satara	Phaltan	Bombay*	-
														Poona*	-
														A'nagar*	-
Sept- ember	1973	Satara	Phaltan			A'nagar	Shri- rampur			A'nagar	Rahuri			A'nagar	Sangam- ner
										A'nagar	Shri- rampur			A'nagar	Shri- rampur
														Kolhapur	-
														Satara	-
														Bombay	-

Notes : \* Reports of agitations appeared from a number of places in the taluka.

- Place not specified.

Source : The Statement is prepared for illustrative purpose on the basis of news-items that appeared in daily Sakal, (Marathi Newspaper), Poona during the period September 1972 - September 1973 and covers only a part of the agitations that occurred in the different districts of the State.

(Concluded)

## APPENDIX - II

### SUGGESTED APPROACH TO AGRICULTURAL PLANNING IN THE DECCAN

The planning exercise for the improvement of agriculture in the drought-prone tracts of the Deccan will have to begin with the preparation of the present and the potential land-use capability maps. It is noted that in the drought-prone tract most of the hill tops and hill slopes are bereaved of vegetation. Denudation of hills means a fast run off and heavy soil loss; this has resulted not only in the retrogression of vegetation but also has caused considerable damage to the agricultural lands situated below the hill slopes; since the water retention capacity in the upper region is almost wholly lost. Therefore, the hilly area will have to be treated as a conservation area and a ten year plan for checking the damage and gradual restoration of the soil and vegetation cover will have to be worked out through measures like gully plugging, nala bunding, trench-cum-mound fencing and agave plantation for protection, followed by plantation of pioneering species. This area can eventually yield fodder, fuel, timber, agave fibre, fruit and nuts. The hilly areas will have thus to be permanently kept under appropriate tree and grass cover so as to check the soil erosion and to ensure moisture conservation.

It is necessary to resort to contour trenching and afforestation to protect the steep areas. The prescribed standard trench is 2' x 1' x 200' with an unexcavated portion of 5'. The trenches are to be provided at horizontal distances varying from 75' to 200' depending upon the slope of the land. The trenches are to be partly refilled and the remaining excavated material should form a small bund on the downward side. Hardy varieties like Neem, Babul, Kasheed, are recommended for afforestation. If the top catchment is unfit for growing trees or grass-cover it is necessary to divert the water from such a catchment by a diversion trench to a suitable valley so as to prevent the run off from such lands entering the cultivated area.

Nala bunding scheme has to form a part of the soil conservation programme so that the upper slopy lands are protected by contour bunds, the lower flatter lands are protected and flooded by 'nala bunds', and the minor water courses are plugged by stone-plugs. Bunding will help retention of the rain-water run off against the embankment for 2-3 days so that the silt will get deposited in the basin and the impounded water will soak into the ground. With these measures, adequate soaking or flooding of a part of the nala basin and catchment area can be secured even in years of inadequate rainfall, and at least one crop will be assured. Trees like Ram-kanta Babul or Neem can be suitably planted to form a shelter belt that can help reduce the velocity of wind and thus minimise evaporation losses (Gadkari, 1956, pp. 37-40).

The areas of moderate slopes and the flat lands will be largely put to crop cultivation with some areas being earmarked for pasture, fruit trees, fodder and fuel trees plantation. In the very low rainfall belt, major emphasis will have to be placed on the development of pasture lands. Contour furrows, trenches and bunds will have to be appropriately provided for where the topography is rolling and soils shallow. In this area perennial fodder legumes and suitable grass species can be established. Intensity of pasture-use will have to be regulated according to the carrying capacity of the pasture land. Forage yield can increase considerably with managed and controlled rotational grazing.

For areas under dry cultivation, the major limiting factor is the quantum of precipitation. Soil and water conservation measures are of vital importance for the stabilization of crop yields in this area. The low-lying areas which are liable to flooding can get protection if the harvest of the run-off is properly planned in the upper reaches. An integrated scheme of soil and water conservation which will include measures like afforestation, grass land development, terracing, contour bunding, *nalla* bunding etc. together with a programme of effective tapping of ground water and surface water resources including water harvesting and farm ponds will have to be prepared for a sub-water shed. Controlled rotational distribution of water to maximize the crop production per unit of water used will be appropriate in the drought-prone areas. Suitable crop planning according to agro-meteorological data and soil moisture retention data and keeping in view the basic consumption needs of the farming population will have to be prepared. In addition, contingency plans will have to be kept ready to suit various weather probabilities. Planning of crops in suitable blocks will help application of water in a controlled measure so that the available water is optimally used.

Agronomic practices like proper tillage, contour cultivation, strip cropping, appropriate crop rotation, maintaining optimum plant population, mulching, etc. will help conserve moisture and the quality of soil. Appropriate blend of organic, inorganic fertilizers together with bacterial, algal, microbial fertilizers and proper crop rotation can help achieve better utilization of the available fertilizers. Integrated pest and disease management involving agronomic, genetic, biological and chemical methods as well as appropriate crop rotation and mixed cropping methods can make for effective pest control. Integrated pest control and fertilizer application will be facilitated if the land is pooled so as to form an optimal unit from the point of view of scientific crop management. Pooling of land resources can also help eliminate the malutilization of bullock power experienced today in the form of shortage of bullocks on small farms and idle capacity on medium farms. Judicious combination of mechanical power and animal power can also be achieved. Introduction of improved seeds, new crops, new agronomic practices will be possible if the risk is spread

over a larger area and larger number of crops. Experimentation and innovations will be thus stimulated as the risk-taking capacity of the unit increases appreciably. All the above measures viz. improved agronomic practices, judicious combination of different types of fertilizers, measured water supply, pest control etc. require scientific planning and certain technical and managerial skills. A small or medium farmer is not often in a position to get access to these services; moreover the scattered and small size of plots does not make it possible to apply the new methods even if he learns about them. With the pooling of land, problems of scientific planning and crop management can be easily handled. Necessary resources for the investment in equipment, machinery, vehicles, storage space etc. can also be more easily mobilized. Storage and processing of farm output, use of cow dung to produce methane, collection and transport of milk, eggs etc. will be facilitated. At the community level, improvement in the drinking water facility, use of agricultural waste and night soil for energy purposes, education and training programmes etc. can be organized once a basis for community activity is firmly laid down through joint farming.

Pooling of land resources would be possible under State farming or joint farming societies. It is not easy to involve the farmer in active decision making process in the case of State farming. An organization like joint farming co-operative society would therefore be preferable.

*Formation of joint farming co-operative society :* All the cultivators and agricultural labourers willing to join the joint farming society will have to pool all their resources viz. land, livestock, implements etc. To encourage joint farming, Government will have to stipulate that the supply of canal irrigation water, electricity, fertilizer and other inputs at subsidized rate would be available only to the joint farming societies and not to the individual farm units. Land use plans worked out for each water-shed will have to be followed by all the farming units in the given water-shed whether or not they join the co-operatives.

Each society can comprise of 15 to 30 families depending upon the size of the individual land-holding so as to achieve a viable size of the farming unit. After the formation of the joint farming society it is necessary to consolidate the fragmented plots through exchange to create viable farm-units. In principle, there will not be any non-working member in the joint farming society except in cases where there is no able bodied person in the family. Every member will be a participating member contributing his/her labour, and receive a share in the farm produce in view of the contributions made. In addition, a small return on the land, major implements, draught cattle etc. given to the society may be provided on the condition that a specified contribution in terms of work must be made to the joint farming society. The membership of the society must be open to the landless agricultural families; as the

proportion of such families is not large in the drought-prone areas, it should not be difficult to give them some land e.g. land above the ceiling limit, or the Government waste land. They should be allowed to join even if they do not own any land.

At the village level, a federation of joint farming societies will have to act as a coordinating agency. The federation will have to be responsible for bulk purchases of the agricultural inputs, storage and marketing of agricultural produce, maintenance of agricultural machinery. It will have to oversee the establishment and management of village level forest and pasture areas and maintenance of bunds, channels, drains etc. It will have to organize a centre for local experimentation and verification and extend services like soil testing, agronomic advice etc. At present co-operative societies at the village level extend services like credit, supply of seed, fertilizer etc. and the Government provides advice and extension service but their services are availed of by the farmers according to their asset positions. They do not play any role in the conservation and augmentation of land and water resources which is as important (if not more) as the supply of fertilizer or better seed, from the point of view of increasing agricultural productivity. The federation can have links with the co-operative units in other villages for exchange of outputs. It can also diversify economic activity by taking up manufacturing as a supplement to agricultural activity and choose such branches as agricultural input supply, agro-processing and manufacture of selected consumer goods, either on the basis of local raw material availability or local demand.

The organization of work during the lean season will have to be appropriately planned by the federation of the societies. Work priorities will have to be fixed, the work of repair, maintenance of channels, bunds, tanks etc. receiving the highest priority, followed by the long-term asset building works in the form of development of forests, pastures, plantations. If the work thus generated is not adequate to provide the necessary employment to the members of the joint farming societies when they are free from the farm work, supplementary activities like agro-processing and certain branches of manufacturing which can provide for seasonal employment will have to be added. In the initial stages the off season developmental work will have to be funded through the Employment Guarantee Scheme. This facility should be extended only to the co-operative farming societies through their village level federation. It is expected that when the measures of conservation and augmentation of natural resources are properly executed these will create a substantial base for productive work for all the members of the co-operative. Thus, a coordinated programme of resource conservation and improvement planned scientifically and operated jointly by the working members of the co-operatives can help develop the land capabilities

in the drought-prone region such as to make for a return to labour that provides an adequate living in a normal year; when this is ensured, even if the rains are untimely or inadequate the situation can be easily met, through appropriate adjustments in the agricultural and other work schedule and then and then alone the words 'famine' and 'scarcity' will lose their edge.



## NOTES

1. Occurrence of famine due to drought conditions and subsequent failure of crop and extreme food scarcity is only considered here. Famine due to pests, locust swarms, flood, hail storms, wars, etc. is not taken into account.
2. For details vide : (i) *Report of the Indian Famine Commission, 1898*, pp. 17, 23, 31, 148, 155, 172, 179, 182, 189, 193. (ii) *Report of the Indian Famine Commission, 1901*, pp. 61-72.
3. The Famine Inquiry Commission appointed by the Government (1945) admitted in the Report on Bengal, that "It lay in the power of Government of Bengal, by bold, resolute and well-conceived measures at the right time to have largely prevented the tragedy of famine as it actually took place".
4. (i) Ferishta relates that so early as 1396 Sultan Mahmud kept a train of 10000 bullocks on his own account constantly going to and from Malwa and Gujarat for grain to supply his stricken kingdom of Bahmini. (Loveday, 1914, p.23.)
5. For details see, Etheridge, 1868; Sinha, 1964, Srivastava, 1968.
6. The quantity of rice and wheat exported was about 12 lakh tonnes in 1879-80, the amount doubled in 1881-82. In 1891-92 about 33 lakh tonnes of foodgrains were exported. Even in one of the worst famine years viz. 1895-96 there was an export of about 23 lakh tonnes of foodgrains. The quantum of exported foodgrains increased subsequently and in 1904-05, 50 lakh tonnes of foodgrains were exported. (*Census of India, 1951, Vol.1, India, Part I-B, 1955, p.311.*)
7. "Thus in 1807 they disputed as to the wisdom of importing grain until the cattle were dead and their means of transport gone, and when finally they guaranteed price and teams were organised and trade began they found that by the time the grain arrived the famine was over and some 23000 garce of rice were left on their hands. They failed to check mortality." (Loveday, 1914, p.39.)
8. "The great object of saving life and giving protection from extreme suffering may not only be as well secured but in fact will be far better secured if proper care be taken to prevent the abuse and demoralization which all experience shows to be the consequence of ill-directed and excessive distribution of charitable relief." (*Report of the Indian Famine Commission, Part I, 1880, p.35.*)
9. See, Col. Baird Smith : *Report on the Famine of 1860-61 in North Western Provinces.*
10. Sir Arthur Cotton who was responsible for the conception and execution of the major irrigation works in the deltas of Krishna, Cavery and Godavari, was an ardent proponent of the grand irrigation-cum-navigation scheme for the Indian subcontinent. In his long evidence before the Select Committees of the House of Commons of Indian Affairs in 1872 and in 1878 his scheme was discussed at length. Sir Cotton emphasized that for giving India direct

protection from famine arising from drought the first place must be assigned to the works of irrigation. He argued that the true value of irrigation must be reckoned in terms of the direct protection afforded in years of drought by saving of human life, by the avoidance of loss of revenue remitted and of the outlay in costly measures of relief. Besides, in season of average rainfall irrigation helps increase the out-turn substantially; it is this entire benefit and not just the financial returns to the Government on the capital invested that must be considered in examining the value of an irrigation project. Sir Cotton put equal stress on the value of irrigation canals for navigation purposes. Contrasting with railways the benefits of canal system he pointed out that (i) Water traffic is much cheaper than land traffic (ii) canal can help drain the country, provide security from floods, supply drinking water and abundance of forage and plants. The grand canal scheme proposed by Sir Cotton envisaged a link between Calcutta and Ludhiana by Ganges canal and a further link to Karachi via Indus, a link between Calcutta and Cape Comorin by the East Coast canal and West Coast canal from Cape Comorin to Karwar. The other major links suggested were Hyderabad (Sindh) to Bombay, Agra to Indore, Surat to Chanda, Ponani to Nellore, etc. For this purpose the major rivers and the canals were to be improved and certain new canal links to be developed. (Hope, 1900, pp. 270-71, 293-96, 328-32.) The scheme was, however, never investigated in detail. -The development of modern transport through the construction of railways continued and even the then existing water transport network remained neglected, leave apart the development of a new navigation system.

11. The net irrigated area from all sources increased from 14.5 million hectares to 19.4 million hectares between 1910 and 1947. The net irrigated area for the undivided India was 28.2 million hectares in 1946-47; this came to 24 per cent of the net sown area.

12. From about 1920 India became a net importer of foodgrains, the net imports on an average being about ten lakh tonnes per year. In 1939-40 the net imports of foodgrains were to the tune of 22 lakh tonnes. The imports declined to 9.6 lakh tonnes in 1940-41 and 4.3 lakh tonnes in 1941-42. In 1942-43, the Bengal famine year, there was actually a net export of 2.9 lakh tonnes. (*Census of India, 1951, Vol. I, India, Part I B, p. 312.*)

13. The domestic production of cereals was 457 lakh tonnes in 1950-51, it reached the level of about 610 lakh tonnes in 1953-54 and fluctuated around that level till 1957-1958. In 1958-59 the production moved to 655 lakh tonnes and in 1960-61 to about 690 lakh tonnes; it remained around that level for the next four years. In 1965-66, a drought year the production dropped to about 620 lakh tonnes.

14. In 1899-1900 famine, 28 million people were affected in the British India and famine relief benefited 4.6 million people at the peak of the crisis. The number of people relieved reached as high a proportion as 45 per cent in Raipur, 25 per cent in Buldhana district. The people in receipt of gratuitous relief formed 45 per cent of the relieved population. Famine relief together with revenue remissions, etc., cost the exchequer about 15 crore rupees. (*Report of the Indian Famine Commission, 1901, pp. 4-8.*)

15. Net area irrigated increased from 194 lakh hectares in 1947 to 326 lakh hectares by 1973-74.

16. The foodgrains production was about 70 million tonnes in 1955-56 and it reached a level of about 108 million tonnes in 1970-71.

17. In 1972-73, about 36 lakh tonnes of foodgrains were imported and the quantum imported in the following years was 48 lakh tonnes, 74 lakh tonnes and 64 lakh tonnes respectively.

18. Information about average yields of different crops in different talukas of Konkan, Western Maharashtra and Marathwada regions and in different revenue circles of Vidarbha region of the State as presented in, *Crop Insurance in India* by V.M. Dandekar, 1976, pp. 92-102 is used here. The estimated average yields of crops are based on crop-cutting experiments conducted by the Agricultural Department, Government of Maharashtra. The data refer to the period 1964-65 to 1973-74, and cover in all 342 sets of observations, 91 on rice, 87 on kharif jowar, 55 on bajra, 65 on rabi jowar and 44 on wheat.

19. Unless a comprehensive policy that provides the displaced cultivators with equivalent land is worked out, the problem of land acquisition will remain a major hurdle.

20. The 1968-69 agricultural year was taken as the reference year as it was the latest year of normal agricultural production in relation to all the major crops grown in the State.

21. Zilla Parishad was the main agency responsible for the execution of the scarcity relief works. Since the works were spread over a large number of villages throughout the district a large quantum of work-charged establishment had to be appointed. The Zilla Parishads were allowed to charge to the relief funds the actual expenditure incurred on this establishment up to a limit of 4 per cent of the cost of the scheme. In addition a limit of 3 per cent was given for the preparation of plans and estimates, provision of tools and equipment and overhead charges. (Subramanian, 1975.) The purchases made by the Government for the provision of tools, equipment etc. were charged to the relief funds. Allowance for the expenditure on the dynamite and fuse needed for well-digging and metal-working had also to be made. Leakages through manipulations of attendance records, measurements etc. were reported. This resulted in some diversion of funds from wage payment. In view of these factors the estimated wage payment is put at 85 per cent of the total expenditure on scarcity relief works.

22. The Fact-Finding Committee for survey of Scarcity Areas in Bombay State (1960) included in the list of irrigation projects (MSSA, I, 1960, pp. 33-36) three projects that would benefit parts of Sirur taluka viz. Chaskaman project to benefit 15420 hectares, Kukadi project to benefit 6720 hectares and *bandhara* across Vel river to benefit 1620 hectares i.e. a total of 23760 hectares from Sirur taluka which comes to about 20 per cent of the cultivated area in the taluka.

23. It is necessary to note certain limitations of the survey data as regards the coverage and the reliability of the information. Information about the size of land-holdings is available in the village records; this information could have served as a basis for drawing the sample for the survey. However, most of the families were away from home from early morning till late evening to work at the various relief works and it was well-nigh impossible to locate a specific family at the work site. It was, therefore, decided to contact the families at the work site in such a way as to include the families from the various land-size groups, e.g., large, medium, small cultivators, landless labourers, artisan approximately in proportion to their total strength in the village population. Information about the number of earners, the daily earnings, the problems faced at the relief works, size of land-holding, crops cultivated, etc., could be obtained fairly

accurately. As regards the income of the last normal year, the quality of information was uneven; it was however cross-checked with the data on crop pattern, average yields, wage rates, etc., to get an approximate estimate of the average income in a normal year.

24. The household level information was collected by Shri Antrolkar from Antroll village. We are thankful to Shri Antrolkar for making the information available for use in the present report.

25. The survey work was carried by Prof. S.S. Patil and his colleagues from D.G. Commerce College, Satara, with the help of the students from the college. The data made available for the use in this report is gratefully acknowledged.

26. "The Estimates indicate that about 9 lakhs of cattle were sold and about 5.5 lakhs of cattle may have died" (Subramanian, 1975, p. 239.)

27. The average per capita monthly consumption of cereals noted in a normal year viz. 1967-68 was 14.01 kg. in ten districts of the State. (Subramanian, 1975, p. 443.)

28. Distribution of cereals through fair price shops was started in the State in 1956. There were 8000 fair price shops in 1962, about 18000 shops in 1964, 26000 in 1972 and 29359 fair price shops in 1973.

29. On 17.4.1973 three deaths were reported at Malegaon and six deaths were reported at Sinnar on 22.4.1973. (*Manoos Weekly* 5.5.1973, pp. 4-8.)

30. The news items in relation to the various demands put forth in different parts of the State as well as various issues raised in the context of the drought that appeared in the daily 'Sakal', a Marathi Daily published from Poona, during the period September 1972 to September 1973 are tabulated in the Appendix. The nature of demand and the taluka and the district of the villages/towns/cities where the agitations, *morchas*, *gheraos*, picketing, mass meetings, etc., were held are indicated in the statement. Only one newspaper viz. 'daily Sakal' which covers major district-level news items particularly from the Western Maharashtra, is covered. The agitations, *morchas* etc., in other parts not covered by 'Sakal' are left out of the statement. The statement is, thus, partial in coverage. It is given to get a broad idea of the nature of demands and of the number of struggles waged by the drought-stricken population from different parts of the State to secure work.

31. In 1965-66 drought about 1.30 crore population was affected and the maximum labour attendance between May-July 1966 was 5.51 lakh, i.e., 4 per cent of the affected population, while in 1971-72, the number was 1.88 crore; at the peak period about 7 per cent of the affected population was at the relief works. The corresponding figures in 1972-73 were 2.00 crore and 25 per cent. In 1965-66, at the peak, 5631 relief works were in progress while in 1972-73 the number was 64406. (*Report of the Fact Finding Committee for Survey of Scarcity Areas of Maharashtra State*, I, 1973, p. 107).

32. In 1952 priorities in types of relief works to be opened up were laid down as follows : (i) irrigation works (tanks, bunds, channels), (ii) soil conservation, (iii) road works. It was prescribed that the work should be productive, should be capable of employing large number of workers and should be labour intensive. (MFFC, I, 1973, p.91.)

In a survey of famine conditions (1952-53) in the affected regions of Maharashtra and Mysore that covered a sample of 180 villages it was noted that 35 per cent of the labour days were absorbed by road works, 37 per cent by bunding and 28 per cent by construction and repair of irrigation

tanks and minor irrigation works. For 10 per cent of the affected population relief work was locally available, and for about 50 per cent within a reasonable walking distance. (Dandekar and Pathe, 1962, pp. 11-12.)

33. A report from Akola district gives the following information about the progress of community wells in the district as on 19.10.1974 presented at the Zilla Parishad meeting. Number of works of community wells taken up-853; Total expenditure incurred-Rs. 79.04 lakh; Wells where water was struck-422; Number of certified wells-110; Wells fitted with pumpsets-13 and area irrigated in 1974-75 rabi season-23 hectares. (*Manoos Weekly*, 12 June 1976, p.2.)

34. "They (the workers) began to be vocal about several grievances some of which were justified, namely, short measurements, delayed payments, lack of amenities, false musters, lack of sufficient tools, inadequate medical facilities, meagre supply of foodgrains etc." (Subramanian, 1975, p. 529.)

35. In this context the Indian Famine Commission of 1880 quoted the great administrator 'Turgot' who considered that "the best and most useful kind of alms consists in providing means to earn them." (IFCR, I, 1880, p.36.)

36. "Even in a normal year 20 to 30 per cent population of India live on insufficient food." (*Administrative Report of Madras, 1877-78*, p.76.)

37. Lord Lytton's Minute of 12th August 1877, *vide, Report of the Indian Famine Commission, 1898*, p. 238.

38. In 1896-97 famine, according to the Report of the Indian Famine Commission, 1898, the real value of the works executed during the famine was approximately 40 per cent for British India as a whole, though interprovincial variations were considerable. (IFCR, 1898, p. 232.)

39. During 1899-1902 famine the death rate in Bombay Presidency was about 83 per mille while the average death rate for the ten year period ending 1896 was 30. Malarious fever was the major cause that took the toll of 35.5 per mille (as against the ten year average rate of 22.2) and cholera epidemic, 10.80 per mille (the average rate being 1.6) and dysentery-diarrhoea accounted for 15.7 deaths per mille (average rate was 2.3). (*Report on the Famine in Bombay Presidency, 1899-1902*, Vol. II, Appendices, pp. 196-201.)

40. During the famine of 1876-77 the wages in Bombay Province were fixed at (i) for an adult male one anna plus value of one pound of grain, (ii) for adult female half an anna plus value of one pound of grain; it was contended that for want of professional supervision it was impossible to exact a full task from the workers and hence the wages of men were reduced by  $\frac{1}{2}$  anna and of women by  $\frac{1}{4}$  anna. The workers declined to submit to reduced wages or to perform the required task and struck work. The immediate result was a considerable reduction in the number of workers on the Civil Agency works in Poona, Ahmednagar and Solapur districts. In Solapur the number declined from about 56,659 in January to 10,078 in February 1877. A good deal of sympathy was elicited by this strike. The Government, however, did not yield. The Government of India declared that "although Government was bound to do utmost to save people from death by starvation, it could not always undertake to save them from death owing to their own obstinacy or misconduct." As Sir Temple put it, "They liked the village works with lax system. They disliked the public work with a strict system, to which it was proposed to transfer them. They imagined that by throwing themselves suddenly out of employ they virtually offered a passive resistance to the orders of Government." (*Report of the Indian Famine Commission, Part III, Famine Histories, 1885*, pp. 169-170.)

41. The ration suggested for adult male working on relief work was 681 grams of cereals and 113 grams of pulses plus some oil, salt, etc. For adult male doing light work it was 658 grams of cereals and for those in relief houses it was 454 grams of cereals.

The quantum of cereals and pulses in the balanced diet (which includes milk, vegetables, oil and gur) for adult men and women suggested by the ICMR is set below for comparative purpose.

			Sedentary work	Moderate work	Heavy work
(Per day in grams)					
<i>Adult men</i>					
Cereals	...	...	460	520	670
Pulses	...	...	40	50	60
<i>Adult women</i>					
Cereals	...	...	410	440	575
Pulses	...	...	40	45	50

(*Recommended Dietary Intakes for Indians*, 1981, p.53.)

42. "In Bombay during the famine of 1899-1900 a minimum wage was paid accompanied by fines which reduced the amount ultimately paid in some cases to 25 per cent below the minimum". (Nash, O, *The Great Famine*, 1900, p.32.)

43. The problem of classification and task work system was raised by two members viz., James Caird and H.E. Sullivan. In the note of dissent on certain points from the Report of the India Famine Commission, 1880 they maintained, "It is to meet the case of the incapable workers that it is recommended in the Report to retain the unsatisfactory task work system, by which strong labourers are restricted to a limited amount of work and the weak are compelled to fulfill their task under penalties sometimes dangerous to their lives, to enforce .... a system which assimilates the unfortunate recipients of relief to gangs of convicts sentenced to hard labour and the engineers in charge to Jail Warders." It was suggested that "If adequate and timely supply of food has been arranged for, either by importation from other parts of India or private storage in localities difficult of access should divide the people needing relief into two classes, those capable of doing remunerative labour and those who are not. .... In those districts of the country which are periodically subject to famine permanently useful works of public utility should be prepared, to be then ready for execution. On the approach of famine these should be thrown open to all capable workers under the superintendence of the P.W.D. .... This class, (those capable of doing remunerative labour) as it would include also blacksmiths, carpenters, bricklayers and masons, who would exercise their calling on the public works would probably comprise two-thirds of the people requiring the help of the State if measures are taken at an early period before the people become emaciated. To the remaining third, the persons who from age or infirmity or being unfitted by their normal occupation or other sufficient reason for doing remunerative field work, food should be gratuitously supplied in their villages, on the lowest scale sufficient to maintain health, without exacting other labour than such sanitary or other light work as could be advantageously done near their home." (IFCR, I, 1880, pp. 65-66.)

44. With this provision, the need to extend gratuitous relief on any significant scale was done away with. The proportion of total relief expenditure accounted for by gratuitous relief was 26 per cent in Bombay Province dur-

ing 1899-1900 famine (IFCR, 1901, p.7) while in 1972-73 it was less than one per cent. (Subramanian, 1975, p.167.) The families with more than three non-workers per two workers had to face more hardship as the dependents were no more to receive any relief independently. (Subramanian, 1975, p.167.)

45. The maximum limit was fixed in order to prevent the worker from over-exerting himself and because of the financial implications. It also served in preventing professional labour from making unduly large earning. (Subramanian, 1975, p.167.)

46. It was argued that, "Minimum wage encouraged the worker to put nominal task during the day and the cost of the work done with scarcity labour exceeded its value. Small difference in the minimum and the daily wage did not offer a sufficient incentive to the ordinary worker to turn out a full day's work. The Government therefore decided to discontinue the minimum wage for able-bodied workers and decided to pay wages strictly according to results by adopting piece rate system. The piece rate on scarcity works was fixed at 2/3rd of the normal scheduled rates." (MFFC, 1, 1973, p. 95.)

47. "The existence of a public granary ... ready to be thrown open whenever distress pressed ... would be a standing encouragement to improvidence and recklessness and to that most dangerous of popular vices, the disposition to force the Government to grant public charity. The plan would strike a death-blow at that healthy development of the internal trade of the country".(IFCR, 1, 1880, para 163, p.54.)

48. Two members, in their minute of dissent, expressed a need for a scheme of State storage of foodgrains. (IFCR, 1, 1880, pp. 66-68.)

49. In the Bengal Famine of 1942-43 the unofficial estimates put the number of deaths between 3 and 4 million persons. (Aykroyd, 1974, p.77.)

50. In 1899-1900 famine it was estimated that the average wage earned by a labourer on relief works in Bombay Presidency worked out to about 450 grams per day.

51. As against this proposal of situating the scarcity relief works into the long-term plan the procedure presently followed is totally arbitrary and *ad hoc*. In words of the Task Force, "at present ceilings for relief expenditure are arrived at by a team of four to six officers of the Central Government on the basis of a hurried tour of three or four days in which a number of places affected by the calamity are visited and thereafter discussions are held at the State headquarters. ... They have to give snap judgement ... and recommend amounts which may run into 20, 50 or even 100 crores. As things stand today there is practically no monitoring or field supervision or detailed periodical review of relief expenditures and the result quite often is not only infructuous and unnecessary expenditure but also many kinds of malpractices and misuse of funds. It would perhaps be no exaggeration to state that there is no other activity in which demands are processed as perfunctorily, funds of huge dimensions allocated so easily and expenditure incurred with such inadequate planning and scrutiny as in the case of relief operations".(IADO, 1973, p.74.)

52. The work could be completed under the 'Employment Guarantee Scheme' of the Government of Maharashtra.

53. It is observed that on the Deccan canal systems about 60 to 70 per cent of the water is being used for sugarcane cultivation. As a result the use of water remains confined to the upper reaches of the canal. Consequ-

ently the benefit of irrigation gets restricted to only about 40 per cent of the area originally designed to receive irrigation.

54. It was noted in IARI Study (quoted in *Report of Irrigation Commission*, 1972, Vol. I, p.111) that yield of wheat trippled with one timely watering in comparison with the yield of wheat without any irrigation and the yield was five times as much with five timely waterings.

55. For detailed discussion see Brahme, Sulabha, et al. *Regional Planning - A Case Study of Marathwada Region*, 1975, pp. 75-77.



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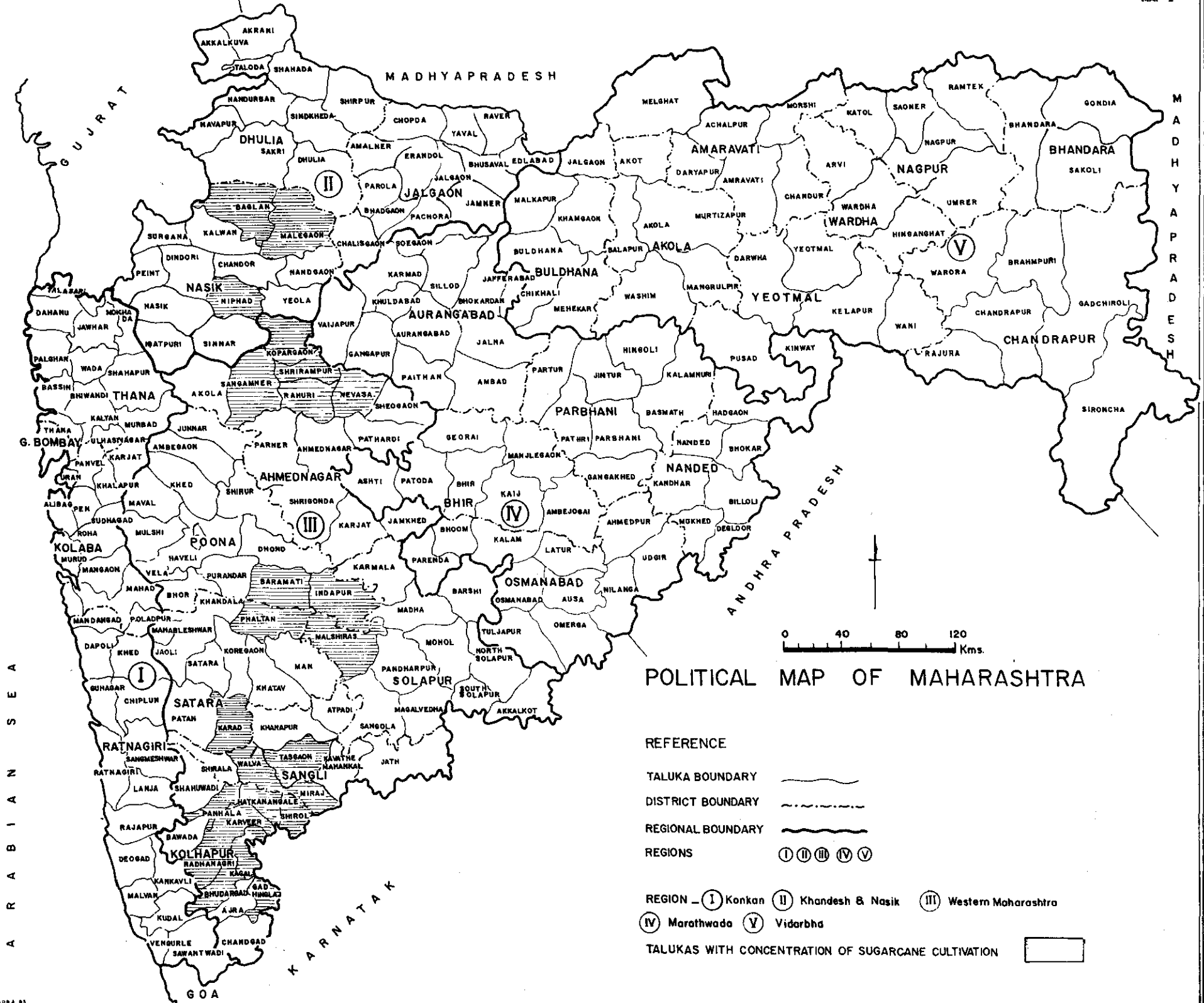
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### POLITICAL MAP OF MAHARASHTRA

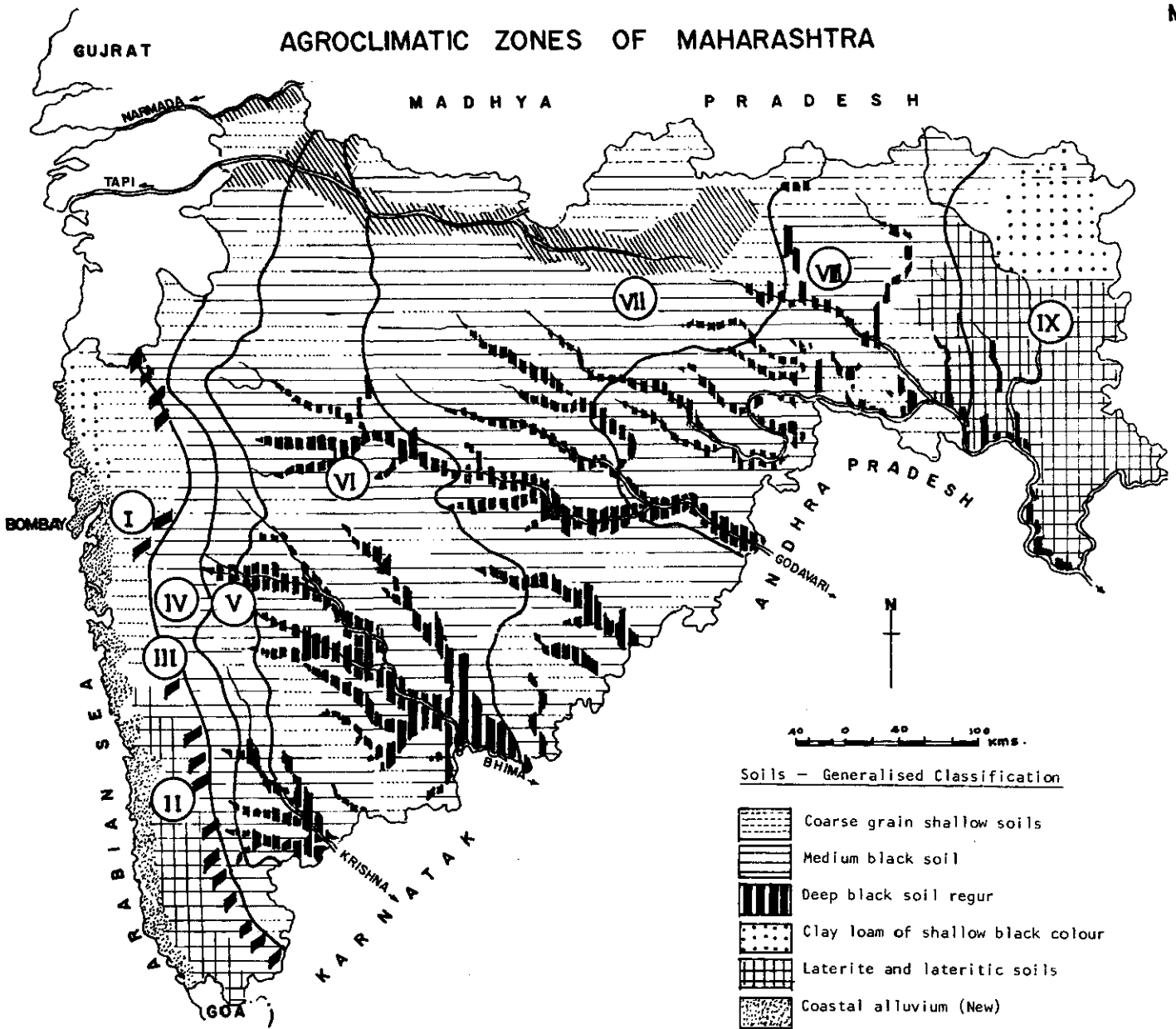
#### REFERENCE

- TALUKA BOUNDARY
- DISTRICT BOUNDARY
- REGIONAL BOUNDARY
- REGIONS

REGION - I Konkan II Khandesh & Nasik III Western Maharashtra  
 IV Marathwada V Vidarbha

TALUKAS WITH CONCENTRATION OF SUGARCANE CULTIVATION

AGROCLIMATIC ZONES OF MAHARASHTRA

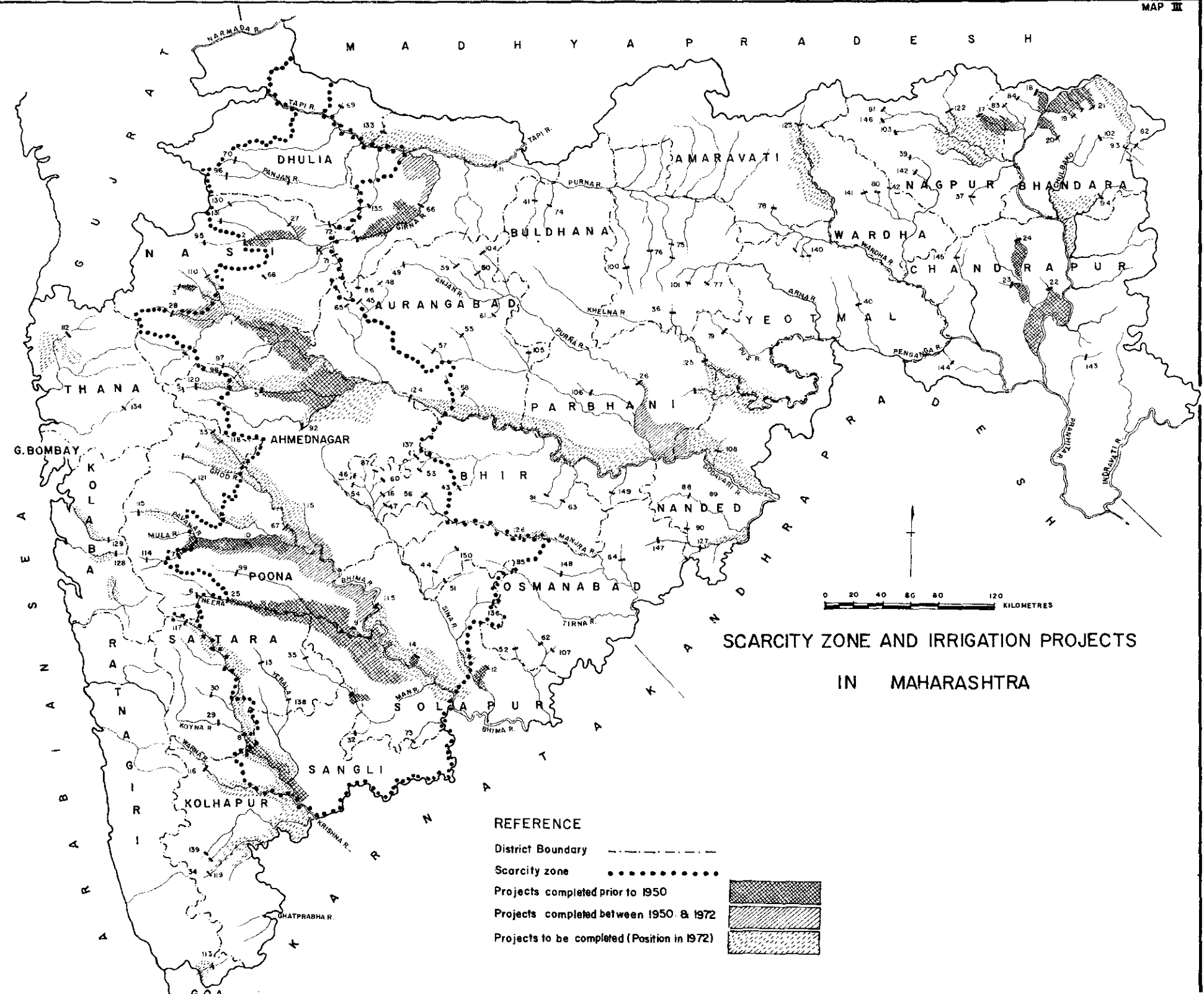


Soils - Generalised Classification

- Coarse grain shallow soils
- Medium black soil
- Deep black soil regur
- Clay loam of shallow black colour
- Laterite and lateritic soils
- Coastal alluvium (New)
- Old alluvium (Riverine)
- Zonal boundary

AGROCLIMATIC ZONE

- |     |  |      |   |
|-----|--|------|---|
| I   | Very high rainfall tract with lateritic soils    | VI   | Scarcity zone                             |
| II  | Very high rainfall tract with nonlateritic soils | VII  | Assured rainfall zone                     |
| III | Ghat zone  | VIII | Moderate to moderately high rainfall zone |
| IV  | Transition A with red to reddish brown soils     | IX   | High rainfall zone                        |
| V   | Transition B with greyish black soils            |      |   |



SCARCITY ZONE AND IRRIGATION PROJECTS  
IN MAHARASHTRA

REFERENCE

- District Boundary - - - - -
- Scarcity zone ..... (dotted line)
- Projects completed prior to 1950 [Cross-hatched box]
- Projects completed between 1950 & 1972 [Diagonal lines box]
- Projects to be completed (Position in 1972) [Stippled box]



LIST OF MAJOR AND MEDIUM IRRIGATION SCHEMES IN MAHARASHTRA

(Numbers indicated in Map III represent the Irrigation Projects as listed below)

SCHEMES COMPLETED PRIOR TO FIRST PLAN	SCHEMES COMPLETED DURING THE PERIOD 1951 TO 1968		PROJECTS COMPLETED BETWEEN 1968 AND 1972	PROJECTS TO BE COMPLETED DURING THE FOURTH PLAN PERIOD	PROJECTS TO CONTINUE IN THE SUBSEQUENT FIVE-YEAR PLANS	
<p>MAJOR PROJECTS</p> <p>BOMBAY DIVISION</p> <p>1 Darna</p> <p>2 Chankapur</p> <p>3 Waghad Dam</p> <p>4 Jamda Canal</p> <p>POONA DIVISION</p> <p>5 Bhandardara Dam</p> <p>6 Bhatghar Dam</p> <p>7 Khadakwasla Dam</p> <p>MEDIUM PROJECTS</p> <p>POONA DIVISION</p> <p>8 Krishna Canal</p> <p>Khodshi Weir</p> <p>9 Shetpal</p> <p>10 Motaba Tank</p> <p>11 Mhaswad Tank</p> <p>12 Ekruk Tank</p> <p>13 Nehr Tank</p> <p>14 Ashti Tank</p> <p>15 Visapur Tank</p> <p>AURANGABAD DIVISION</p> <p>16 Rooty</p> <p>17 Ramtek</p> <p>18 Chandpur</p> <p>19 Bodalkasa</p> <p>20 Chorkhamara</p> <p>21 Khair Band</p> <p>22 Asolamendha</p> <p>23 Naleshwar</p> <p>24 Ghorazari</p>	<p>MAJOR PROJECTS</p> <p>POONA DIVISION</p> <p>25 Vir</p> <p>AURANGABAD DIVISION</p> <p>26 Purna</p> <p>MEDIUM PROJECTS</p> <p>BOMBAY DIVISION</p> <p>27 Mosam Weir</p> <p>28 Gangapur</p> <p>Stage I&amp;II</p> <p>POONA DIVISION</p> <p>29 Tarli Bandhara</p> <p>30 Urmodi Bandhara</p> <p>31 Ext.of Krishna Canal</p> <p>32 Budhial</p> <p>33 Pushpavati Bandhara</p> <p>34 Radhanagari</p> <p>H.E.W.</p> <p>35 Ranand</p> <p>NAGPUR DIVISION</p> <p>36 Ekburji</p> <p>37 Pindrabori</p> <p>38 Sangrampur</p> <p>39 Wunna</p> <p>40 Saikheda</p> <p>41 Nalganga</p> <p>42 Bor</p>	<p>MEDIUM PROJECTS</p> <p>AURANGABAD DIVISION</p> <p>43 Bendsura</p> <p>44 Khasapur</p> <p>45 Dheku</p> <p>46 Kamali</p> <p>47 Talwar</p> <p>48 Shivna Anicut</p> <p>49 Purna Anicut</p> <p>50 Jui</p> <p>51 Chandani</p> <p>52 Harni</p> <p>53 Sindphana</p> <p>54 Mehekari</p> <p>55 Upper Dudhana</p> <p>56 Mohesangvi</p> <p>57 Sukhana</p> <p>58 Galhati</p> <p>59 Khelna</p> <p>60 Kada</p> <p>61 Jivrakha</p> <p>62 Kurnoor</p> <p>63 Wan</p> <p>64 Ghirni</p> <p>65 Kolhi</p>	<p>MAJOR PROJECTS</p> <p>BOMBAY DIVISION</p> <p>66 Girna</p> <p>POONA DIVISION</p> <p>67 Ghod</p> <p>MEDIUM PROJECTS</p> <p>BOMBAY DIVISION</p> <p>68 Daraswadi</p> <p>69 Karwand</p> <p>70 Malangaon</p> <p>71 Manyad</p> <p>72 Kanholi</p> <p>POONA DIVISION</p> <p>73 Padawalkarwadi</p> <p>NAGPUR DIVISION</p> <p>74 Gyanganga</p> <p>75 Katepurna</p> <p>76 Morna</p> <p>77 Giroli</p> <p>78 Malkhed</p> <p>79 Pus</p> <p>80 Dongargaon</p> <p>81 Umri</p> <p>82 Managhar</p> <p>83 Sorna</p> <p>84 Bagheda</p> <p>AURANGABAD DIVISION</p> <p>85 Thirna</p> <p>86 Gadedgad</p> <p>87 Kadi</p> <p>88 Manar Stage I</p> <p>89 Manar Stage II</p> <p>90 Kundral</p> <p>91 Bodhegaon</p>	<p>MAJOR PROJECTS</p> <p>POONA DIVISION</p> <p>92 Mula</p> <p>NAGPUR DIVISION</p> <p>93 Bagh</p> <p>94 Itiadoh</p> <p>MEDIUM PROJECTS</p> <p>BOMBAY DIVISION</p> <p>95 Chankapur</p> <p>96 Panzra</p> <p>97 Bhojapur</p> <p>POONA DIVISION</p> <p>98 Adhula</p> <p>99 Nazare</p> <p>NAGPUR DIVISION</p> <p>100 Nirguna</p> <p>101 Pardi Takmore</p> <p>102 Chul Band</p> <p>103 Chandrabagha</p> <p>AURANGABAD DIVISION</p> <p>104 Dhamma</p> <p>105 Kalyan Girja</p> <p>106 Karpara</p> <p>107 Khandala</p> <p>108 Kudala</p> <p>109 Karadkhed</p>	<p>MAJOR PROJECTS</p> <p>BOMBAY DIVISION</p> <p>110 Upper Godavari</p> <p>111 Upper Tapi</p> <p>112 Surya</p> <p>113 Tillari</p> <p>POONA DIVISION</p> <p>114 Khadakwasla</p> <p>Stage II</p> <p>115 Bhima</p> <p>116 Warna</p> <p>117 Krishna</p> <p>118 Kukadi</p> <p>119 Dudhganga</p> <p>120 Upper Pravara</p> <p>(Mahaldevi)</p> <p>121 Chaskaman</p> <p>NAGPUR DIVISION</p> <p>122 Pench</p> <p>123 Upper Wardha</p> <p>AURANGABAD DIVISION</p> <p>124 Jayakwadi</p> <p>125 Upper Penganga</p> <p>126 Manjra</p> <p>127 Lendi</p>	<p>MEDIUM PROJECTS</p> <p>BOMBAY DIVISION</p> <p>128 Kal</p> <p>129 Amba Valley</p> <p>130 Hiran Bari</p> <p>131 Kelzar</p> <p>132 Suki</p> <p>133 Aner</p> <p>134 Bhatsa (Irri.)</p> <p>135 Bori</p> <p>POONA DIVISION</p> <p>136 Pangaon Hingni</p> <p>137 Pargaon Ghatshil</p> <p>138 Yeralwadi</p> <p>139 Tulsi</p> <p>NAGPUR DIVISION</p> <p>140 Takli</p> <p>141 Panchdhara</p> <p>142 Kanholi</p> <p>143 Dina</p> <p>144 Amalnalla</p> <p>145 Chargaon</p> <p>146 Kesarnalla</p> <p>AURANGABAD DIVISION</p> <p>147 Tiru</p> <p>148 Tawarja</p> <p>149 Masoli</p> <p>150 Bhandardi</p>