CHAPTER - IV

-:- SPATIO-TEMPORAL PATTERN OF SUGAR INDUSTRY -:-



4.1 INTRODUCTION :

India has emerged as one of the largest producer of sugarcane and sugar in the world. Similarly, it has the largest number of sugar factories in the world. However, sugarcane is essentially a tropical crop. During the last two-three decades high potential for sugarcane cultivation has been and is being exploited on planned basis in the tropical regions in India like Maharashtra. The production of sugar and the sugar recovery in Maharashtra is the highest in the country. Number of sugar factory and its crushing capacity is mainly depend upon area under sugarcane and its production in the region.

4.2 NUMBER OF FACTORIES :

The sugar industry in Maharashtra was initiated in 1919 with the setting up of a Belapur Sugar and Allied Industry Ltd; Haregaon, District-Ahmednagar by the private enterpreneur. However, the real boost to this industry was given with setting up of the first cooperative sugar factory in 1948 under the imaginative and dynamic leadership of the late Prof.D.R.Gadgil and Padmshri Vikhe Patil. The success of this cooperative sugar factory inspired other sugarcane growers to organise many more sugar cooperatives in different parts of the state (Gaikwad and Pawar,1992). The pragmatic approach and realistic support of the state government contributed is not small measure to the

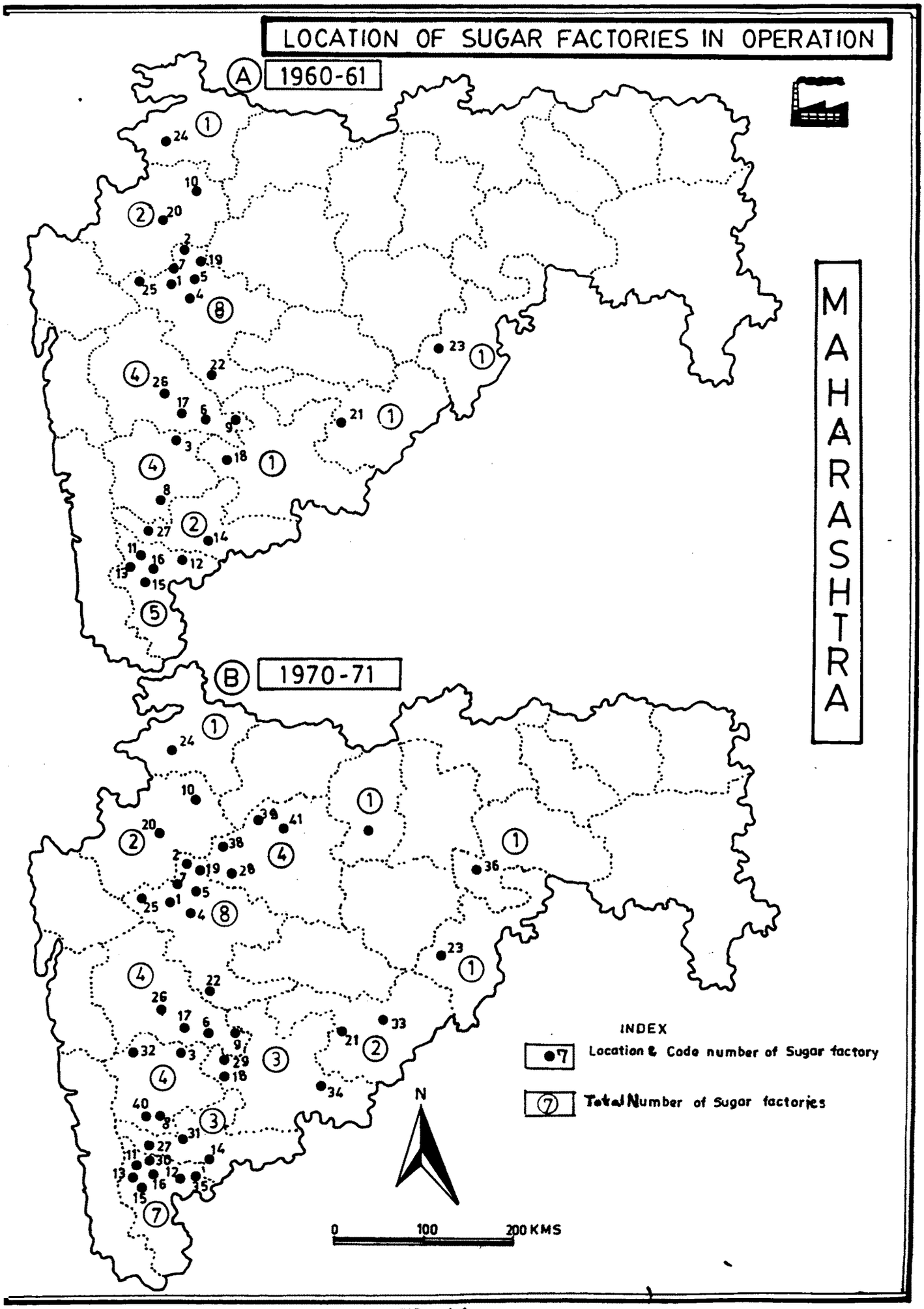
LOCATION OF SUGAR FACTORIES IN OPERATION
A 1960-61
B 1970-71
MAHARASHTRA
INDEX
●7 Location & Code number of Sugar factory
(7) Total Number of Sugar factories
N
0 100 200 KMS

FIG. 4-1

growth and development of the cooperative sugar sector in Maharashtra over the past two decades (Kamat,1987).

In 1960-61 there were 27 (15.51 percent of the country) sugar factories of which 13 were from cooperative sector. The areal distribution (Fig.4.1-A) reveals that Ahmednagar (8) district alone shares about one thirds of sugar factories in Maharashtra, followed by the districts of Kolhapur (5), Pune (4), Satara-Sangli-Nasik (2 each) and Dhule-Solapur-Osmanabad-Nanded (1 each). The number of sugar factories grown upto 77 in 1980-81; high concentration of sugar factories was noted in Western upland districts (Fig.4.2-A). In 1990-91 the number of sugar factories rose upto 97 (25.19 percent of the country). The areal distribution of number of sugar factories depicted in Fig.4.2-B, reveals that above 12 and 8 to 12 number (high concentration) of sugar factories in each district are located in Ahmednagar (13), Kolhapur (11), Solapur (9) districts. These are the districts where perennial source of irrigation like canal and lift are much developed where concentration of sugarcane is also very high (Fig.2.3). The number of sugar factories ranging between 4 to 8 in each district prevails in Sangli-Satara-Pune (7 each); Aurangabad (5), Dhule and Beed (4 each); Whereas below four number of sugar factories in each districts are noted in eastern part of Maharashtra; along with some districts from central part of Maharashtra (Fig.4.2-B).

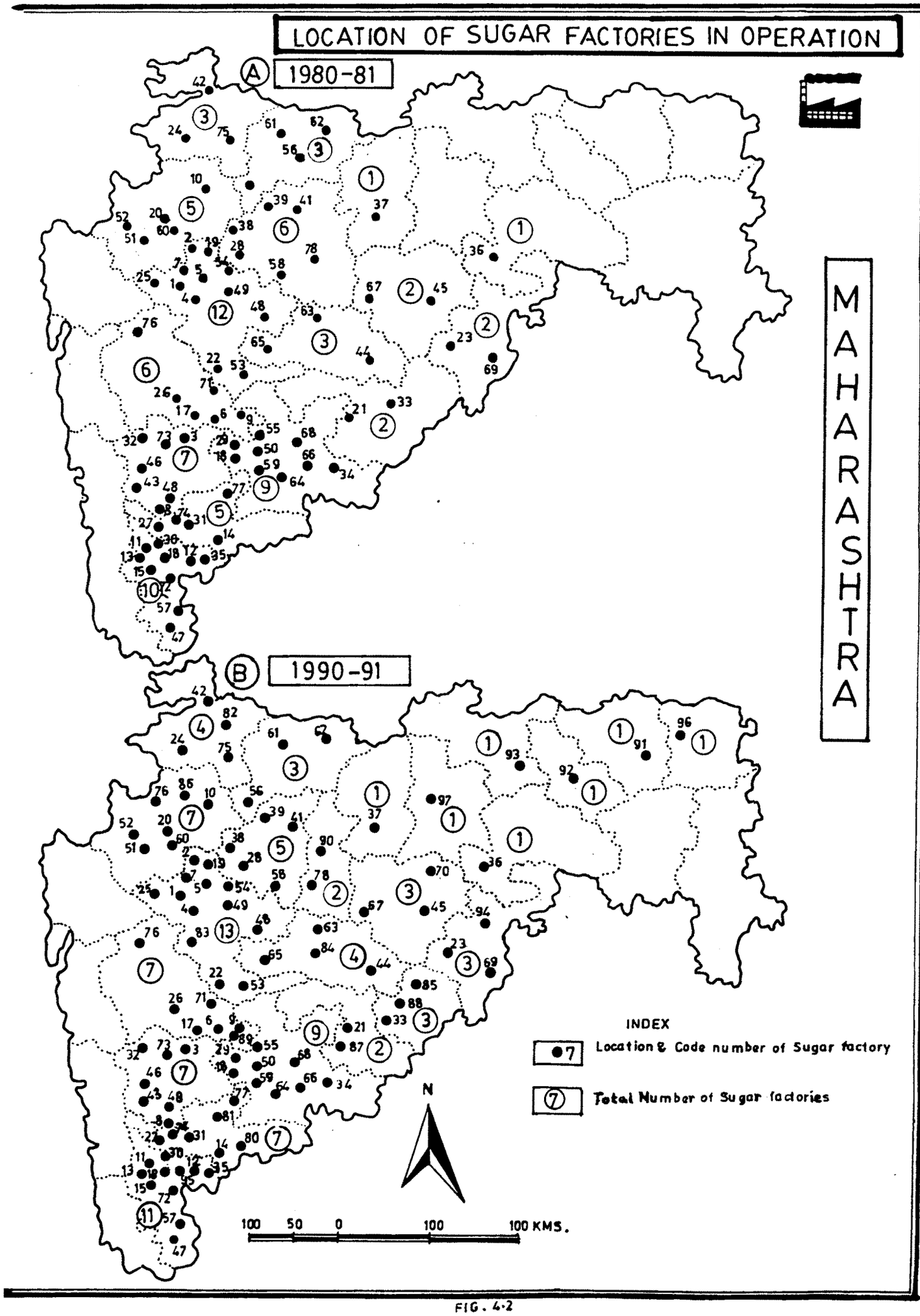
LOCATION OF SUGAR FACTORIES IN OPERATION
A
1980-81
B
1990-91
MAHARASHTRA
INDEX
Location & Code number of Sugar factory
Total Number of Sugar factories
N
100 50 0 100 100 KMS.

FIG. 4.2

◉ MAHARASHTRA-GROWTH TRENDS ◉

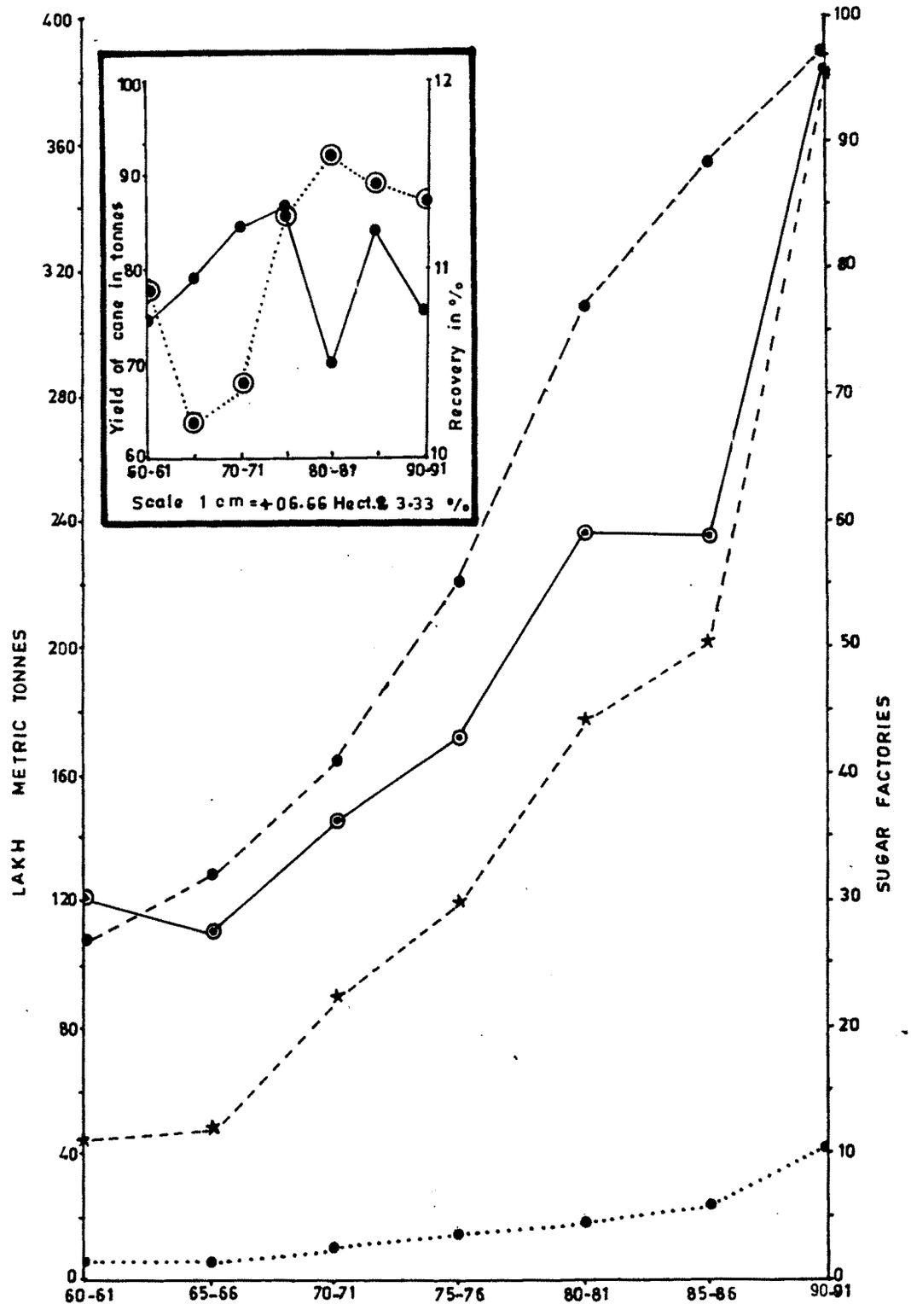

FIG. 4.3

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4.3 GROWTH TRENDS :

Sugar factories require favourable physical and socio-economic conditions for their fair growth. The area under investigation is particularly endowed with such conditions (Chapter 2.3.1). Although the state comprise 30 districts, sugar factories in operation are situated in 23 districts only. In 1990-91 there were 97 sugar factories operating in the state, of which 93 were from cooperative sector (Table 4.1).

Although the first private sugar factory in Maharashtra was established in 1919, widespread of sugar industries have been observed since ninteen sixties.

Fig.4.3 reveals that sugarcane production, sugarcane crushed, sugar production and number of sugar factories are tripelled from 1960-61 to 1990-91 in the State of Maharashtra. Yield and recovery has also been increased during this period. Fig.4.4 reveals the growth trends of these characteristics of sugar industry at national level.

4.4 CRUSHING CAPACITY :

Installed cane crushing capacity per day (TCD) of sugar factories in the State of Maharashtra varies from 1250 TCD to 5000 TCD in cooperative sector and 1016 TCD to 1300 TCD in private sector. It mainly depends upon availability of cane; as also depends upon the ability of factory personnel in avoiding mechanical stoppages, breakdowns and production bottlenecks. As

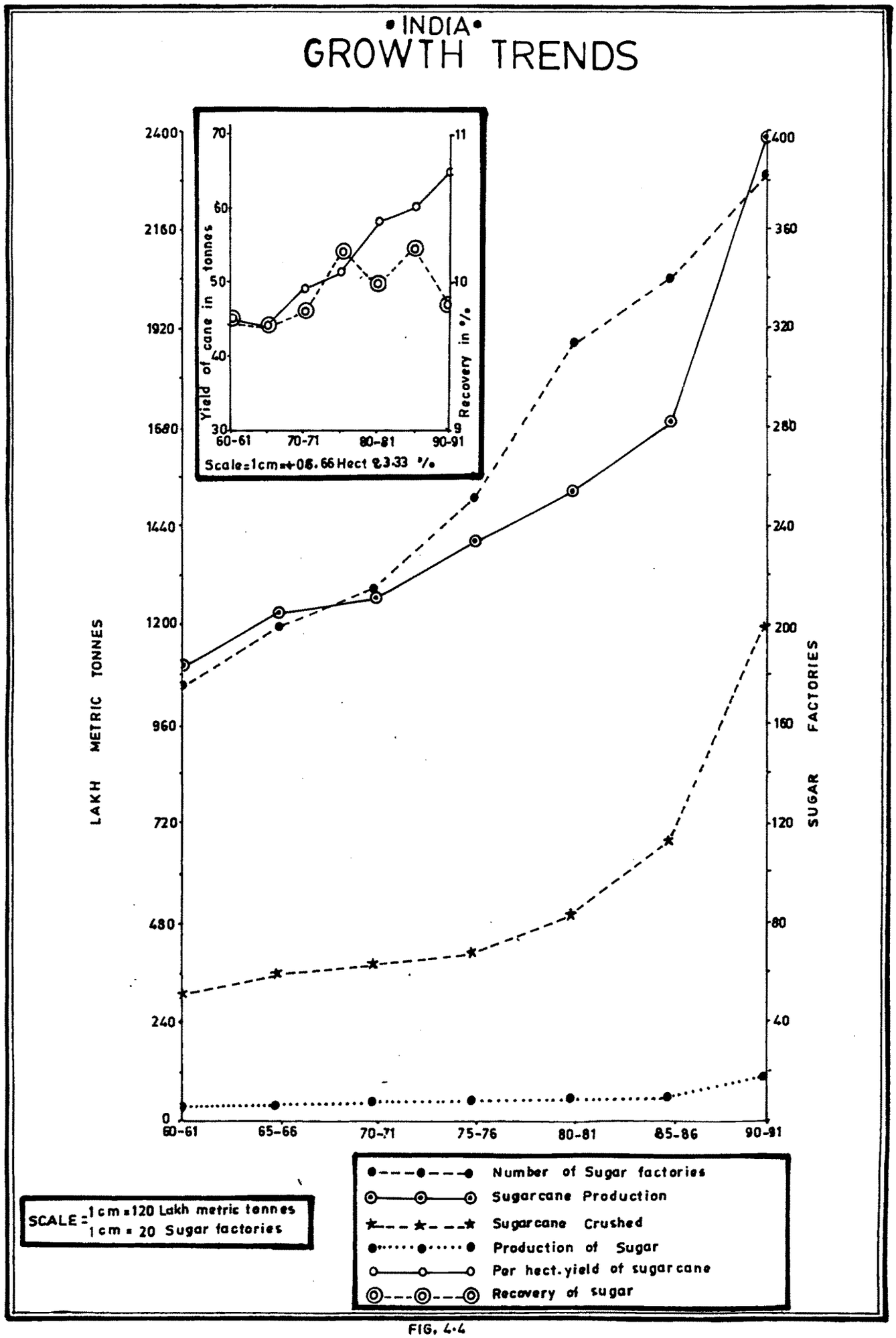
• INDIA •
GROWTH TRENDS
LAKH METRIC TONNES
SUGAR FACTORIES
2400
2160
1920
1680
1440
1200
960
720
480
240
0
400
360
320
280
240
200
160
120
80
40
60-61
65-66
70-71
75-76
80-81
85-86
90-91
Yield of cane in tonnes
Recovery in %
70
60
50
40
30
11
10
9
Scale=1cm=05.66 Hect 03.33 %
SCALE = 1 cm = 120 Lakh metric tonnes
1 cm = 20 Sugar factories
Number of Sugar factories
Sugarcane Production
Sugarcane Crushed
Production of Sugar
Per hect. yield of sugarcane
Recovery of sugar

FIG. 4.4

Table 4.1 : Some characteristics of sugar industry in Maharashtra (1960-61 to 1990-91).

Sr. No.	Particular	1960-61	1965-66	1970-71	1975-76	1980-81	1985-86	1990-91
1	2	3	4	5	6	7	8	9
1	No. of factories in operation	27 (174)	32 (200)	41 (215)	55 (252)	77 (315)	88 (342)	97 (385)
2	Sugar production (000' tonnes)	523 (3021)	620 (3541)	1054 (3740)	1414 (4262)	1875 (5150)	2389 (7016)	4119 (12047)
3	Cane crushed (000' tonnes)	4043 (31021)	4791 (36512)	8923 (38205)	11970 (41880)	17232 (51584)	21319 (68566)	38295 (122338)
4	Sugar production (000' tonnes)	12089 (110001)	10979 (123990)	14770 (126368)	17178 (140604)	23590 (154248)	23706 (170648)	38416 (240287)
5	Yield of cane per hect. in tonnes	78 (45)	64 (44)	68 (49)	88 (51)	92 (58)	89 (60)	87 (65)
6	Recovery of sugar in percent	10.73 (9.74)	10.94 (9.70)	11.22 (9.79)	11.32 (10.18)	10.46 (9.98)	11.20 (10.23)	10.76 (9.84)

Note - Figures in parenthesis indicate the national value.

Source - Compiled by Candidate.

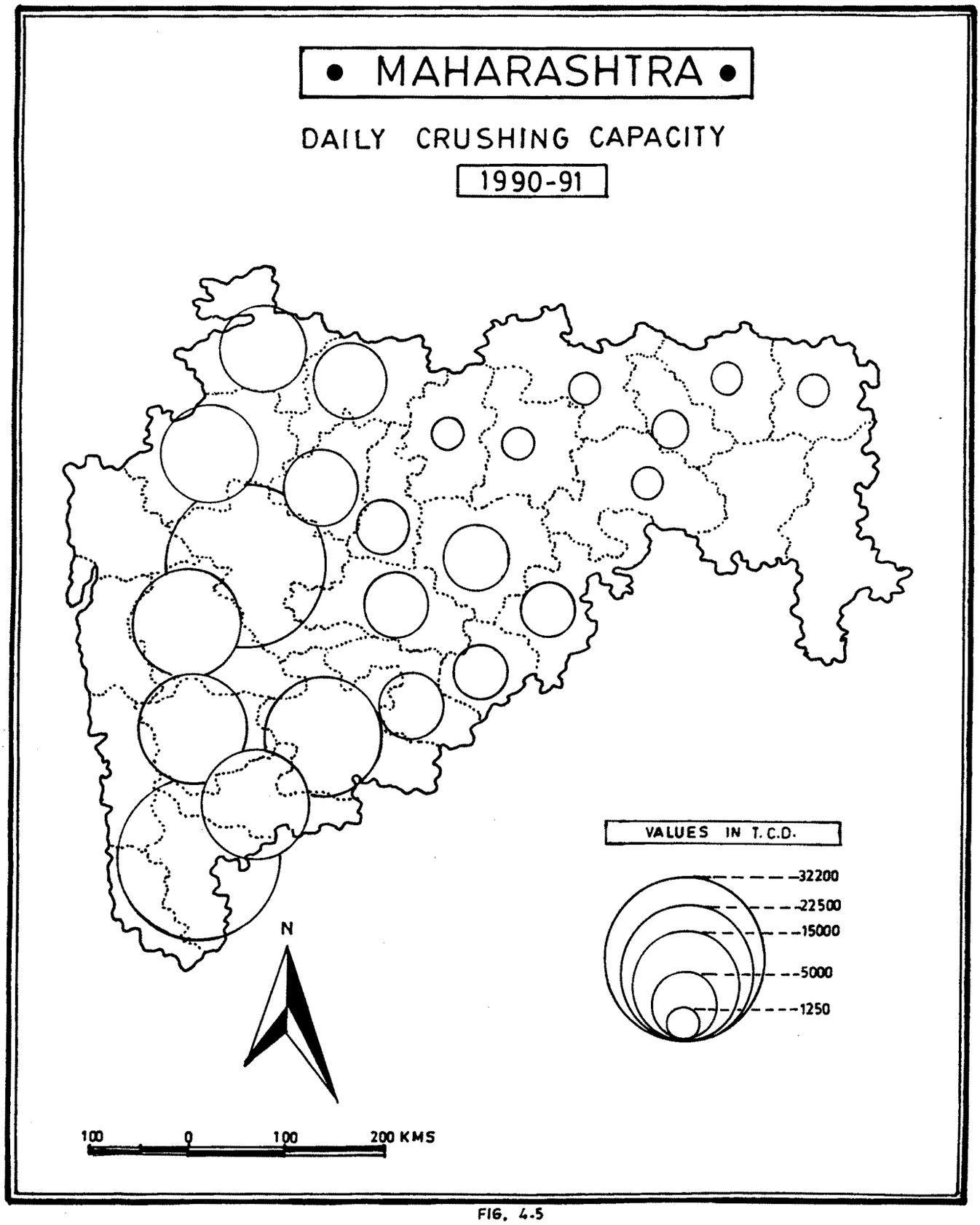
• MAHARASHTRA •
DAILY CRUSHING CAPACITY
1990-91
VALUES IN T.C.D.
32200
22500
15000
5000
1250
N
100 0 100 200 KMS

FIG. 4-5

such the total factories from Kolhapur (32200 TCD) and Ahmednagar (30250 TCD) districts have highest daily crushing capacity in Maharashtra (Fig.4.5) while lowest daily crushing capacity is shown in the districts of Vidarbha where number of sugar factories are also less.

Cane crushed -

Cane crushing of sugar factory is mainly depend upon production of sugarcane. In our country, Maharashtra ranks first in cane crushing. In 1990-91 season, Maharashtra shared 31.30 percent cane crushed in India. It rose from 40 lakh tonnes in 1960-61 (Fig.4.6-A) to 172 lakh tonnes in 1980-81. The spatial analysis of cane crushing for the year 1990-91, reveals the following three distinct zone (Fig.4.6-B).

(1) High cane crushing zone :

Kolhapur and Ahmednagar districts were always the topper in cane crushing. Besides these two districts this zone includes the districts namely Pune, Nasik, Satara, Sangli, Solapur, Dhule and Aurangabad etc., which together possess 75.72 percent of cane area and 50.51 percent of irrigated area of the state. None the less this zone possess fertile alluvial soils and high rate of adoption of farm technology. Among the 70 number of factories of this zone 66 are from cooperative sector exhausting full crushing capacity.

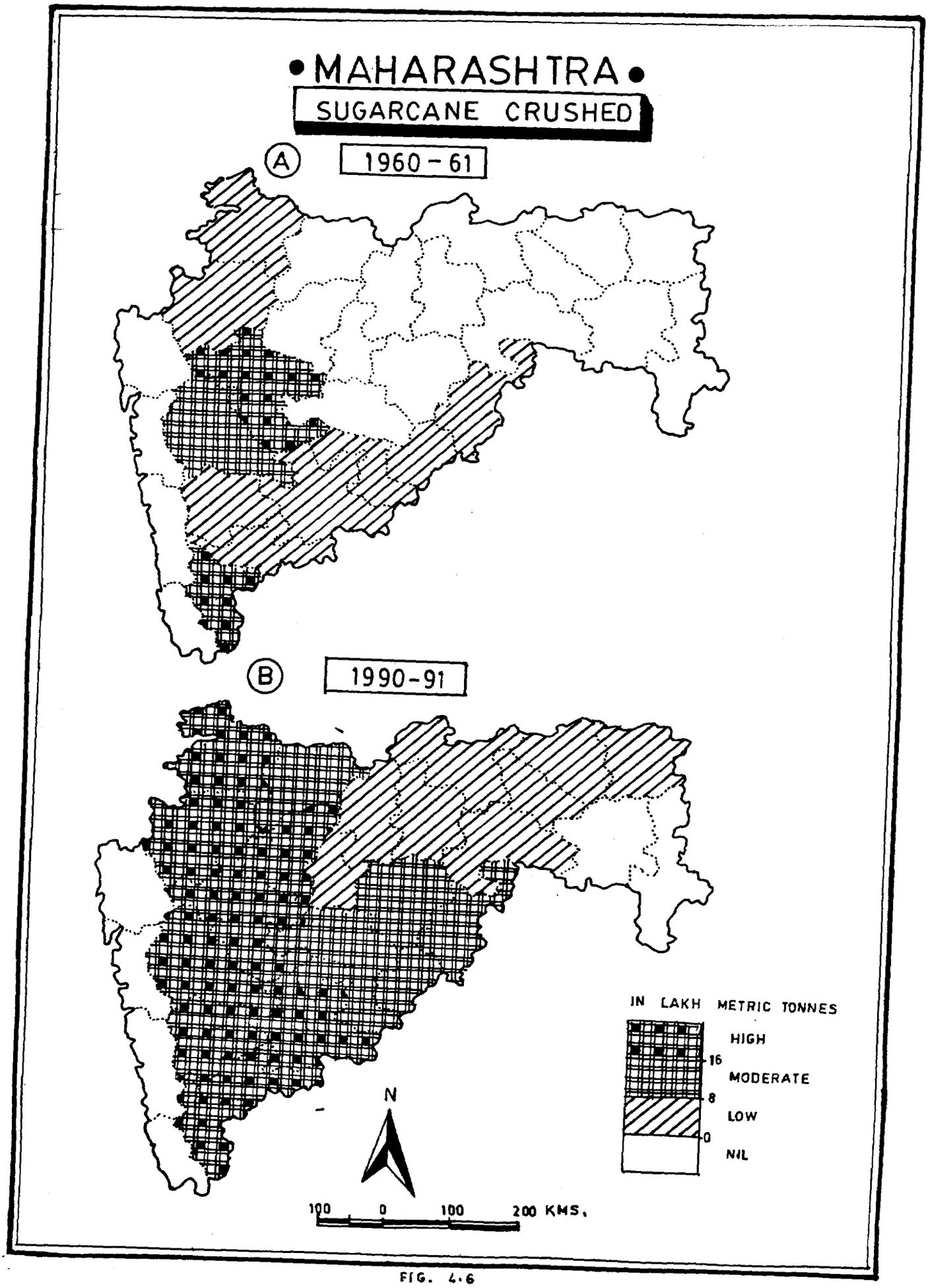
• MAHARASHTRA •
SUGARCANE CRUSHED
A
1960 - 61
B
1990-91
IN LAKH METRIC TONNES
HIGH
16
MODERATE
8
LOW
0
NIL
N
100 0 100 200 KMS.

FIG. 4.6

(2) Moderate cane crushing zone :

This zone includes most of districts from Marathwada region along with Jalagaon district (Fig.4.6-B) in the north. The moderate intensity of irrigation (Fig.2.3), high variability of rainfall (Chapter 2.1.2) presence of poor soils are some of the factors affecting adversely on cane cultivation of this zone. About 18 factories situated in this zone have a crushing capacity ranging between 8 to 16 lakh metric tonnes.

(3) Low cane crushing zone :

This zone comprises all the districts from Vidarbha region except Chandrapur and Gadchiroli districts. Lack of perennial sources of irrigation, low proportion of suitable soils for cane cultivation and late adoption of cooperative movement (a broad base for sugar industry of Maharashtra), share together the responsibility of less cane cultivation resulting into low cane crushing of this zone. Whereas the littoral districts of Maharashtra, being quite unsuitable, have not yet started cane cultivation.

4.5 SUGAR PRODUCTION :

India recorded a new peak of sugarcane production by producing 120.47 lakh metric tonnes of sugar during 1990-91 and 134.09 lakh metric tonnes during 1991-92 season. Out of this, Maharashtra State alone shares more than one third of production i.e. 41 lakh tonnes; mostly from cooperative sugar

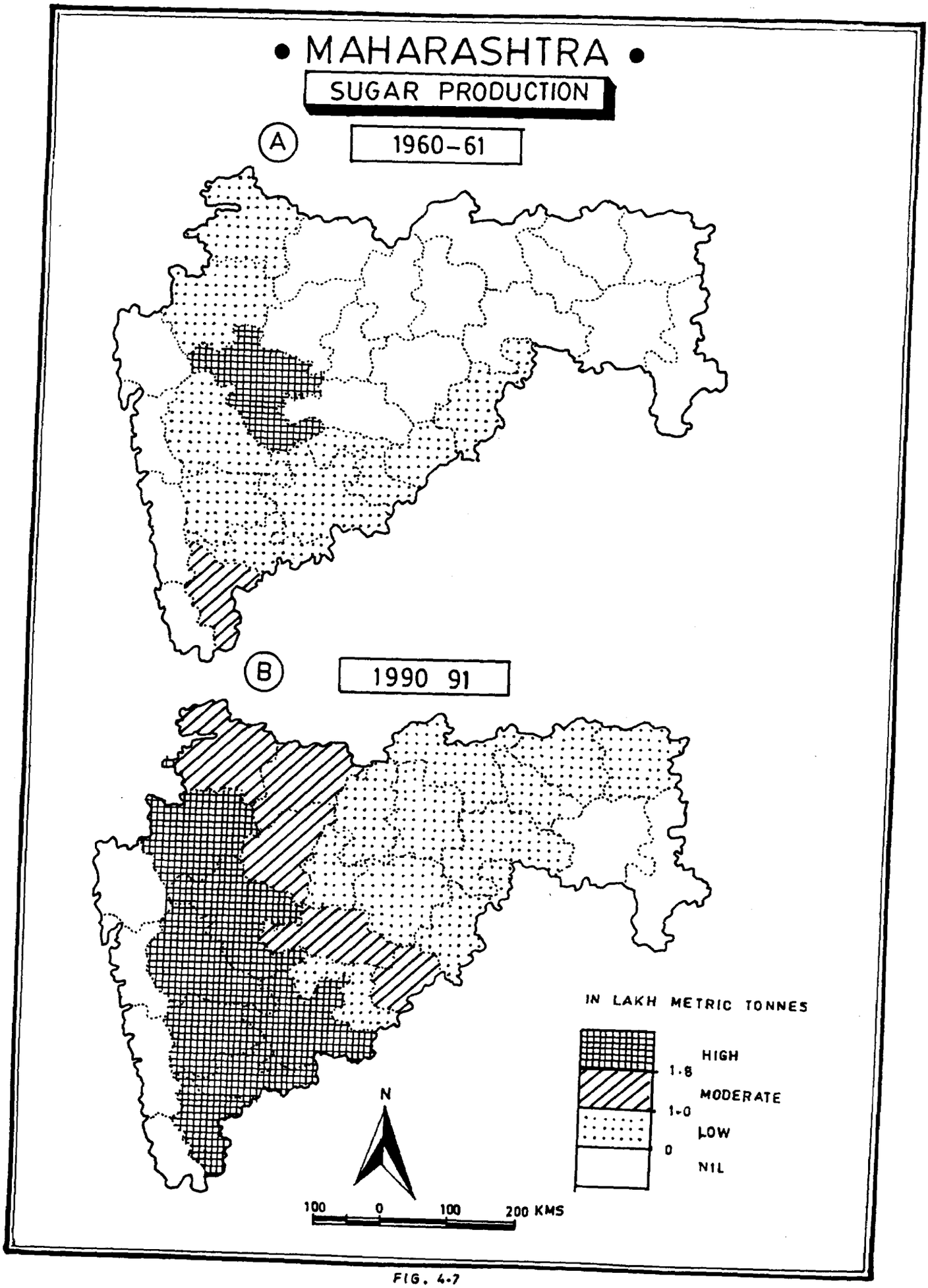
• MAHARASHTRA •
SUGAR PRODUCTION
A
1960-61
B
1990 91
IN LAKH METRIC TONNES
HIGH
1·8
MODERATE
1·0
LOW
0
NIL
N
100 0 100 200 KMS

FIG. 4-7

factories (Appendix - I). Thus, the State of Maharashtra has maintained the reputation of being first in the country. However, within the state, at district level much disparities are observed in sugar production.

For the season 1960-61 the state recorded the production of 5.23 lakh tonnes wherein major share was of Ahmednagar district followed by Kolhapur. These two district together shared 56.18 percent of sugar production of the state; other district were insignificant in sugar production (Fig.4.7-A). It is evident from Fig.4.3 that trend of sugar production is increasing for successive decades. As such for the year 1970-71 the production rose upto 10 lakh which rose to eight times in 1990-91, as compared to 1960-61.

The districtwise analysis of sugar production (1990-91), depicted in Fig.4.7-B, reveals three distinct zones of sugar production in the state.

(1) Zone of high sugar production :

This zone includes seven upland districts of Western Maharashtra namely Ahmednagar, Kolhapur, Pune, Sangli, Satara, Solapur and Nasik. Sharing about 72.25 percent of total production, 62.88 percent of sugar factories and 66.32 percent of cane cultivated area of the state, this zone is known as a "Sugar bowl" of Maharashtra, and that of India. The availability of perennial sources of irrigation, suitable soil conditions and

presence of most suitable climatic conditions have resulted into high per hectare yield and high sugar recovery and extent of cane cultivation (Fig.4.7-B) in this zone. The widespread of cooperative movement is also one of the reasons in boosting the growth of sugar factories in this part of the state.

(2) Zone of moderate sugar production :

Most of the districts of Vidarbha and eastern districts of Marathwada region along with Dhule, Jalagaon have been represented in this zone. Located just to the east of high sugar production zone, this zones shares about 18 percent of cane cultivated area, 19.59 percent of sugar factories and 16.21 percent of sugar production of the state. This is being the climate and pedological condition favourable next to above zone of production.

(3) Zone of low sugar production :

Eleven districts from Vidarbha and Marathwada region together comprises this zone, having the production below one lakh tonne each. Unsuitability of this zone for cane cultivation has resulted into the growth of less number of sugar factories and poor sugar production as well. However, this could be a potential region for extension of cane cultivation and sugar production, provided the perennial sources of irrigation facilities along with technical knowhows are made available to the cane growers.

The far eastern districts alongwith littoral districts of the state show no sugar production, due to absence of sugar factories in these districts.

4.6 SUGAR RECOVERY :

The sugarcane recovery is the ratio of sugarcane crushed to sugar produced. In view of the quantity and quality produced in the sugar factories, this aspect has got special significance. Though Pune district ranks first in Maharashtra in 1960-61 as regards the number of sugar factories and area under sugarcane cultivation, the average recovery percentage of sugarcane in this district was about 12.17. While in the districts of Ahmednagar, Kolhapur and Sangli the average recovery percent of sugarcane was about 11.69, 11.75 and 11.64 respectively. This was inspite of the fact that in all factories the quality of cane taken for crushing was almost the same. In case of Pune district though the number of sugar factories was only four, the average recovery percent of cane was high in 1960-61.

During the 1970-71 season the highest average recovery of sugar was 11.92 percent in Kolhapur district, while the lowest was (10.64 percent) in Dhule district as against of state average of 11.22 percent and national of 9.79 percent.

Kolhapur district was again first in 1980-81 for average recovery of sugar percent cane. This recovery was 11.75 percent

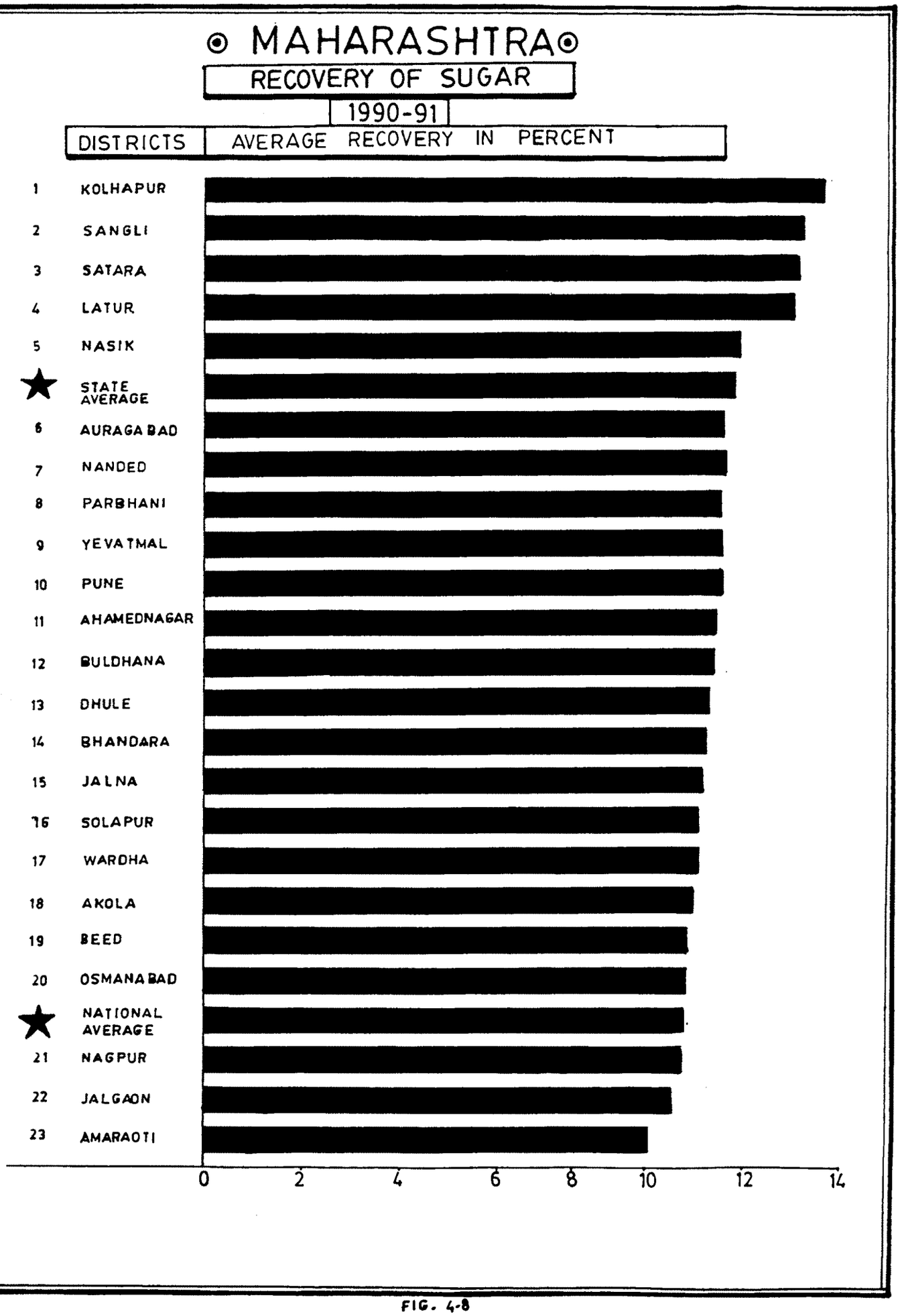
MAHARASHTRA
RECOVERY OF SUGAR
1990-91
DISTRICTS
AVERAGE RECOVERY IN PERCENT
1 KOLHAPUR
2 SANGLI
3 SATARA
4 LATUR
5 NASIK
STATE AVERAGE
6 AURAGABAD
7 NANDED
8 PARBHANI
9 YEVATMAL
10 PUNE
11 AHAMEDNAGAR
12 BULDHANA
13 DHULE
14 BHANDARA
15 JALNA
16 SOLAPUR
17 WARDHA
18 AKOLA
19 BEED
20 OSMANABAD
NATIONAL AVERAGE
21 NAGPUR
22 JALGAON
23 AMARAOTI
0
2
4
6
8
10
12
14

FIG. 4-8

as against 10.46 percent of state average while low percent of average recovery of sugarcane was noted in Vidarbha region. Nonetheless, most of the sugar factories from Western Maharashtra have won the prizes either for high recovery or for best management.

The latest (1990-91) position of average sugar recovery of each district dipicted in decending order in Fig.4.8, reveals that Kolhapur district ranks first in the state with average recovery of sugar 11.69 percent cane (10.76 state average). It is followed by districts namely Sangli (11.32), Satara (11.21) Nasik (10.92), Pune (10.57), and Ahmednagar (10.52) with slight difference. On the contrary the lowest recovery has been recorded by Amarawati district (10.15) followed by Beed and Osmanabad. This is because of low quality of the cane produced in these districts.

The fact worthy to note is that during sixties Pune was ranking first regarding the recovery, but since seventies Kolhapur is topping the list. In general it is observed that the recovery percentage of old sugar factories is declining, which could be well attributed to the production of low quality of sugarcane and use of old and outdated machineries.

4.7 SUGAR DISTRIBUTION POLICY :

In fact geographers are least concerned with this issue. But to know the reader the general system of sugar distribution following attempt is made.

Government of India has been operating sugar distribution policy mechanism through control over prices, distribution and movement of sugar (Joshi,1991). The mechanism is operated through the process of complete control, partial control and decontrol as demanded by the situation. The policy alternatives were framed in the strength of the assessment of the situation relating to sugar production, requirement for internal consumption, need to supply sugar to consumers at reasonable price, export of sugar to earn foreign exchange and payment of remunerative price to the canegrowers. Since June 1979, monthly release mechanism has been introduced along with the system of partial control. The system continues till today of course, with periodical alterations in the ratios of levy and free sale. In 1988-89, the ratio was brought down to 50:50.

The sugar produced is stored in the godowns of the sugar factories. The releases of sugar either levy or free sale into the distribution channel are controlled by the government, through the system of monthly releases. The monthly quotas are further required to be sold by the producers in equal quantities every week (Mohite,1974). As regards the levy sugar (70 percent) the quantities are lifted by various nominees of the government (mostly cooperatives) and the nominees in turn sell the sugar through various fair price shops. In the case of free sale sugar (30 percent) the quantities released by government monthly for this purpose are sold to the various private traders on a tender system. It is worth while

noting that most of the owners of the joint-stock factories are involved in the free sale sugar trade either directly or through their agents, the cooperative sugar factories have no links with the distributors of free sale sugar. Government also does not play a direct role in the distribution of free sale sugar which is in the hands of traders; Government's role in the distribution of levy sugar is also indirect, in the sense the distribution is made by nominees of the government. It is only recently that the government has decided to step in directly in the distribution of levy sugar, through the Food Corporation of India.

4.8 SICKNESS OF SUGAR INDUSTRY :

In spite of the progress made by the sugar industry in Maharashtra, it cannot be denied that it has to face a number of difficulties. Certain difficulties are such that if they are not solved or if no remedial measures are taken at the appropriate time, they could cause great harm and make a certain portion of the industry permanently sick. The Maharashtra Government has been watchful in this respect and has tried to study the problems confronting the sugar industry. They had therefore appointed a committee in the year 1980 under the Chairmanship of Late Shri Gulabrao Patil, then Chairman of the Maharashtra State Cooperative Bank Ltd., Bombay. This committee studied the causes resulting in the sickness and

identified sick cooperative sugar factories and suggested the remedial measures to be taken. The report submitted by this committee in March 1983, was accepted by the government. This committee had identified some sugar factories as sick, and analysed the causes of their sickness. The committee also made certain recommendations to the government.

4.9 EXPORT OF SUGAR :

In 1957, India made an impressive entry into the arena of the world sugar market. By now, the sugar exports should have normally come of age, but there have been ups and downs as a result of which though India has come to stay as a net exporter of sugar in the world market. During the last season (1991) India exported 296,087 tonnes of sugar, in which 31 percent was exported to Shrilanka, 25 percent to Indonesia, 12 percent to Jordan and 11 percent to Egypt. About 26 countries are being supplied sugar by India.

Maharashtra State occupies an unique position in the sugar exports by India. The lowest cost of production and nearness to the port of Bombay are the major factors for this situation. Most of the sugar exported is in the form of raw sugar which is manufactured by almost all the sugar factories spread through the length and breadth of Maharashtra.

However, there are still some problems connected with raw sugar manufacture and storage, like the question of caking

and lump formation in the raw sugar and maintenance of the required humidity in the raw sugar godowns. It is necessary that these problems are tackled by the various existing research organizations and by the proposed Sugar Research Institute of Maharashtra. It is also necessary that to ensure a steady export market to suit the individual quality needs of the buyers, a closer liaison between the technologists in this state and the processing technologist at the buyers end may have to be established by periodical technical delegations to the buyer countries as is the practice in most of the exporting countries.

In Western Maharashtra, there are already more than a 68 working sugar factories with annual production of approximately 33 lakh tonnes of sugar within a distance of 100 to 150 kilometers from the ports. These existing factories can also without difficulty be integrated into the scheme of 'Export-Oriented Sugar Industry of Konkan' as these factories from Satara, Sangli and Kolhapur districts have good communication facilities with Konkan (Mohite,1974).

Bombay port has been suffering from chronic congestion. And the shipping companies have been resorting to levy of additional surcharge on goods shipped from Bombay. Under these circumstances it would be imperative to develop bulk handling and bulk transhipment facilities at one of the Konkan ports. There are at present four small ports and two more are under

construction in the region. One of these and that would obviously be Ratnagiri could be developed suitably to bulk handle sugar.

While on this subject a word may be said about the general notion of loss in export. These export losses are not peculiar to India. A great majority of the countries do suffer losses on export. It is only necessary that an equitable way of sharing the losses between the industry and the government is found out.

In view of it's locational advantages and low cost of production, Maharashtra should continue to play the role of the leading foreign exchange earner for the country through exports of sugar.

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