Chapter IV - Trends in Agricultural Production & Productivity.

+ Introduction.

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Chapter IV

Trends in Production and Productivity of Major Crops -

The agricultural produce includes sereals, pulses, oil seeds, sugars, drugs, narcotics, fibres, fruits and vegetable and fodder. Overall agricultural production during the period under study has shown an increase of 57.55 percent (Table No.4.1). In 1970-71 this was 2,87,40,100 metric tonnes which increased to 4,52,81,500 metric tonnes in 1980-81. Meanwhile it reached to its maximum of 4,76,86,800 metric tonnes in 1977-78.

Among these agricultural commodities produced the percentage share of cereals in 1970-71 was 16.48 percent which increased to its highest of 19.80 percent in 1977-78. But by the end of the period under study the percentage share of cereals in overall agricultural production slightly decreased 19.57 percent in 1980-81. However this group of cereals has shown remarkable increase of 87.11 percent in 1980-81 over the base year 1970-71.

The percentage share of pulses in 1970-71 was 2.35 percent of the total agricultural production. This has shown rising trend upto 2.82 percent in 1975-76. And in 1980-81 it again decreased to 1.83 percent. Butmoverall production of pulses has increased by 22.76 percent in 1980-81 over the base year 1970-71.

Total Agricultural Production

Oil seeds is the only group which as shown decreasing trend both in production as well as their percentage share in overall agricultural production. In 1980-81 oil seeds production has decreased by 15.49 percent over the base year 1970-71. Similarly their percentage share was 2.26 percent in 1970-71 decreased to 1.93 percent in 1975-76 and then to 1.21 percent in 1980-81.

The dressed sugarcane production was increased by 63.42 percent in 1980-81 over the base year 1970-71.

The percentage share of fibres, drugs, narcotics, fruits vegetables and fodder were 1.8 percent; 0.29 percent; 10.81 percent and fodder 25.44 percent in 1970-71. All these groups of crops have shown decrease in their percentage share of 1.86 percent; 0.23 percent; 7.05 percent and 21.28 percent in 1980-81. Except fodder fibres, drugs narcotics and fruits vegetables have shown increase in their production in 1980-81 over the base year 1970-71.

Thus the decade long stagnation was broken in 1973-74 when it first started picking up with 3,20,02,800 metric tonnes. This upward trend continued till 1977-78 when it reached its peak with 4,76,86,800 metric tonnes. The agricultural production dipped in 1978-79 remained stagnant during 1979-80 and 1980-81.

I) Cereals -

The trend in production of cereals can be studied from the table . During the period under study the cereal production had been increased steadily every year except the first two years i.e. 1970-71 and 1971-72 during which there was a drought. Thus in 1980-81 the total cereal production has increased by 87.11 percent over base year 1970-71. It was 47,36,700 metric tonnes in 1970-71 which increased to 88,62,900 metric tonnes in 1980-81. Among this group of cereals the contribution of jowar is important. Jowar contributes about 50 percent of total production of cereals. Table No. 4.2

1) Rice -

Among food crops rice is one of the important crop next to jowar in Maharashtra. The average production of rice accounts for about 19.8 percent of the total food grain production in the state. In 1970-71 the production of rice was 16,62,200 metric tonnes. It decline to 13,94,500 and 7,65,800 tonnes in 1971-72 and 1972-73 respectively. Again since 1973-74 it had show rising trend till the end of the period. It had reached to its maximum i.e. 23,44,100 metric tonnes in 1977-78. During this year wide spread rains were received practically on time by most parts of the state.

Table No. 4.2

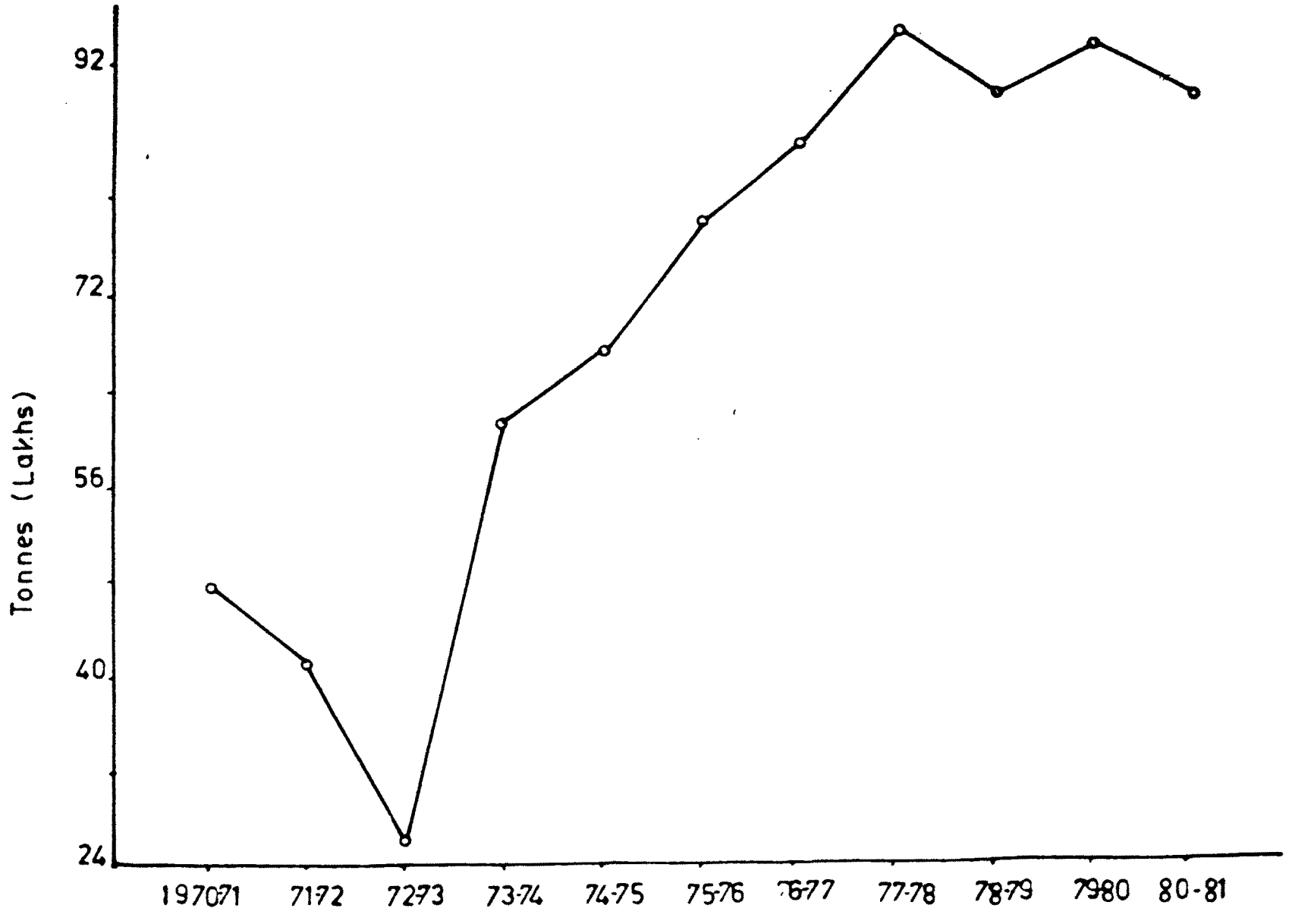
Cereal production in Maharashtra during 1970-71 to 1980-81.

(00 MT Tonnes)

Year	Rice	Wheat	Jowar	Bajara	Maize	Ragi	Others	Total
1970-71	16622	4403	15574	8241	255	1628	644	47367
	(35.9)	(9.29)	(31.87)		(0.53)			
1971-72	13945	4953	18814	2633	230	1488	567	42632
1972-73	07566	2506	13137	2257	163	812	399	26849
1973-74	16370	5469	28143	8499	423	1973	843	61769
1974-75	14641	7542	3669	5919	887	1766	1024	67908
1975-76	22858	11991	34662	5600	863	1881	832	78687
1976-77	19921	9127	46304	6576	1128	1692	969	85717
1977-78	23441	9623	51097	6487	1072	1724	991	94435
197	(24.82)	(10.19)						(1001)
1978-79	22008	9513	48838	5393	1213	2007	878	89850
			(58.59)					
1979-80	18285	10060	54641	6071	1161	2022	1065	93245
1980					(1.41)			
1980-81	23056	9313	44275	7599	1254	2096	1036	88629
% Increase	3871	111.51	184.29	-0.077	391.75	28.75	60.85	87.11

Figures in brackets indicate percent share of the crop.

Cereals Production



Rice Production Per Hectare

In 1980-81 the production of rice was 23,056 metric tonnes which accounts for 38.71 percent increase over the base year 1970-71.

Ample evidence is now available within and outside the country about the superior yield response of new dwarf rice compared to the traditional tall varieties at all levels of fertilization within dry and weight seasons. Compared to the talls, the new varieties due to their ability to utilise nitrogen more efficiently give nearly twice as many kilograms of grains for each Kg of nitrogen applied even at moderate level of nitrogen. Thus the per hectare production of rice in 1970-71 was 1,239 Kg. which increased to 1,570 Kg. in 1980-81. During the year 1975-76 the per hectare production of rice was highest to 1,615 Kg. per hectares. The straw production also runs almost paralled to grain production in these high yielding varieties.

Rice is the most responsive and productive crop. Similarly rice cultivation is labour intensive and efforts to increase it where water is available by wells, tanks and canal as well as under the new command areas would positively ensure higher level of man power utilization for longer period with substantial increase in rice production.

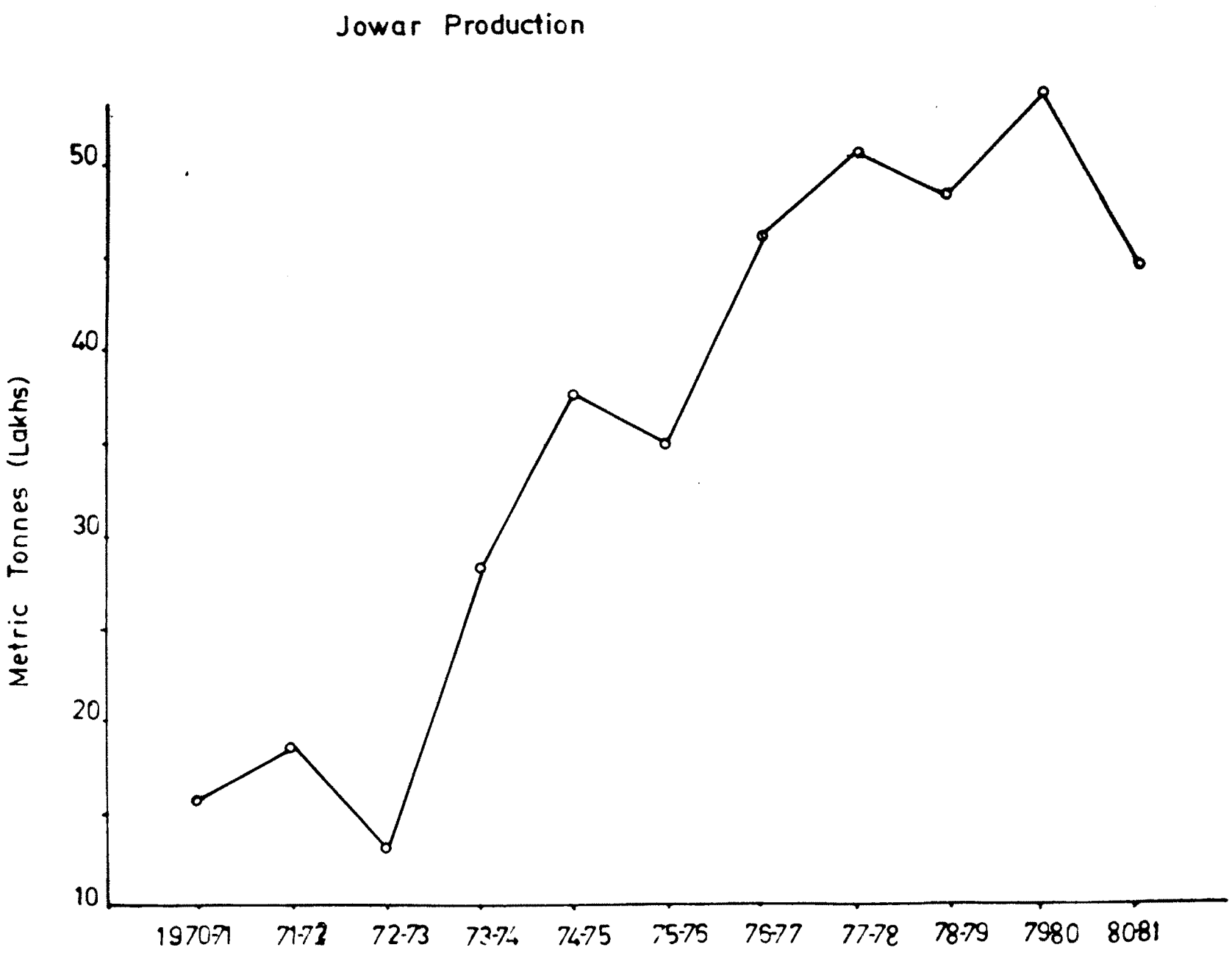
2) Wheat -

The food consumption pattern in Maharashtra shows that the state population of 5 crores requires 9.0 million tonnes

of cereals of which wheat accounts for 1.15 million tonnes. Thus the deficit of wheat as it exhibits today amounts to about 0.7 million tonnes. Except one year 1972-73 the production of wheat had shown steady rise during the period under study. In 1970-71 the production of wheat was 4,40,300 metric tonnes which was increased to 11,99,100 metric tonnes and after that it had shown small decline upto 1980-81 to 9,31,300 metric tonnes. Over the base year 1970-71 there was 111.50 percent increase in wheat production in 1980-81. The production from irrigated area was 0.35 million tonnes while that from rainfed area was 0.15 million tonnes. The main reason for low yields of wheat especially in rainfed area are a short and mid winter season, raising the crop on receding moisture adversely effects atmospheric drought on crops, attack of white ants and white grubs use of local varieties, limited use of fertilizers, lack of clean cultivation and small holdings with meagre credit facilities.

3) Jowar -

The contribution of jowar to the total food grains production is also to the tune of 45-48 percent. Jowar is grown in both the seasons. The contribution of rabi jowar is only 25 percent while the contribution kharif jowar to the production was 23 percent. The yield levels of rabi and kharif jowar were 4 and 6 quintals per hectare respectively in 1970-71 to 1974-75.


Jowar Production
Metric Tonnes (Lakhs)
50
40
30
20
10
1970-71
71-72
72-73
73-74
74-75
75-76
76-77
77-78
78-79
7980
8081


Jowar Production Per Hectare
Kharif
Rabi
Kilograms
1000
600
200
1970-71
71-72
72-73
73-74
74-75
75-76
76-77
77-78
78-79
79-80
80-81

During the period under study the jowar production had increased by 184.30 percent in 1980-81 over the base year 1970-71. During earlier three/four years the production of jowar remained below 28,12,000 metric tonnes. But since 1974-75 it had shown rising trend every year and it was 54,64,000 metric tonnes in 1979-80. Which again declined to 44,27,500 metric tonnes in 1980-81. Thus there is an increase by 184.30 percent. If the end of the period under study shows that the contribution of jowar to total production was not satisfactory, mainly due to erratic rainfall, varying soil moisture conditions, non availability of early, drought resistant tolerant or escaping varieties.

The present yield levels of kharif jowar could easily be raised to 25 to 30 quintals per hectare by using highe yielding varieties which mature in 100 to 110 days.

The productivity of kharif jowar in 1970-71 was 350 Kg per hectare and that of rabi was 220 Kg per hectare which were increased to 1,200 Kg per hectare and 600 Kg per hectare in 1980-81.

4) Bajra -

Bajra is an important food crop of this state giving yield of 404 Kg per hectare in 1970-71. By the end of the period in 1980-81, the yield levels had increased only to 445 Kg per hectares. Among the cereals this is the only crop which had shown negative growth in respect of area as

well as the rpoduction. The production of bajra in 1970-71 was 8,24,100 metric tonnes which was decreased to 7,59,900 metric tonnes in 1980-81. This accounts for negative rise by 0.077 percent.

The low per hectare yield of this crop was due to its cultivation on marginal lands, under erratic rainfall conditions. In recent years there was a set back to bajra production due to downy mildew (Sclerospora graminicola) incidence on hybrids. In some ergot incidence was also heavy which reduced the yields considerably. So far ergot resistant varieties are not available. This is the main reason to decrease the area as well as production of bajra. Therefore more stress will have to be given to early sowing in order to avoide ergot attack.

5) Maize -

The production of maize in thesstate during the period of study had shown considerably rise. In 1970-71 it was 25,500 metric tonnes which as increased to 1,25,400 metric tonnes. This increase comes to 392 percent over the base year. This increase in rpoduction of maize is due to the cultivation of high yielding varieties as well as it multiple uses. Maize can be used as green fodder. And it is grown as mix crop with different crop. Increase, in maize production is also due to the increase in irrigation facilities in the state.

6) Ragi -

Ragi is minor cereal used as food grain in the state. It is grown in kharif season in rainfed areas. Ragi had not shown expected increase in production. Its production in 1970-71 was 1,62,800 metric tonnes which was increased to 2,09,600 metric tonnes. This increase comes to be 28.75 percent in 1980-81 over their base year 1970-71.

7) Other Cereals -

Other cereals like warai, rala etc. had shown 60.85 percent increase in their production during the year 1980-81 over the base year 1970-71. It was 64,400 metric connes in 1970-71 which increased to 1,03,600 metric tonnes in 1980-81.

II) Pulses -

The performance of pulses in the state had been found to be dismal during the period under study. As a result the state could not become self sufficient in meeting the internal demands for pulses.

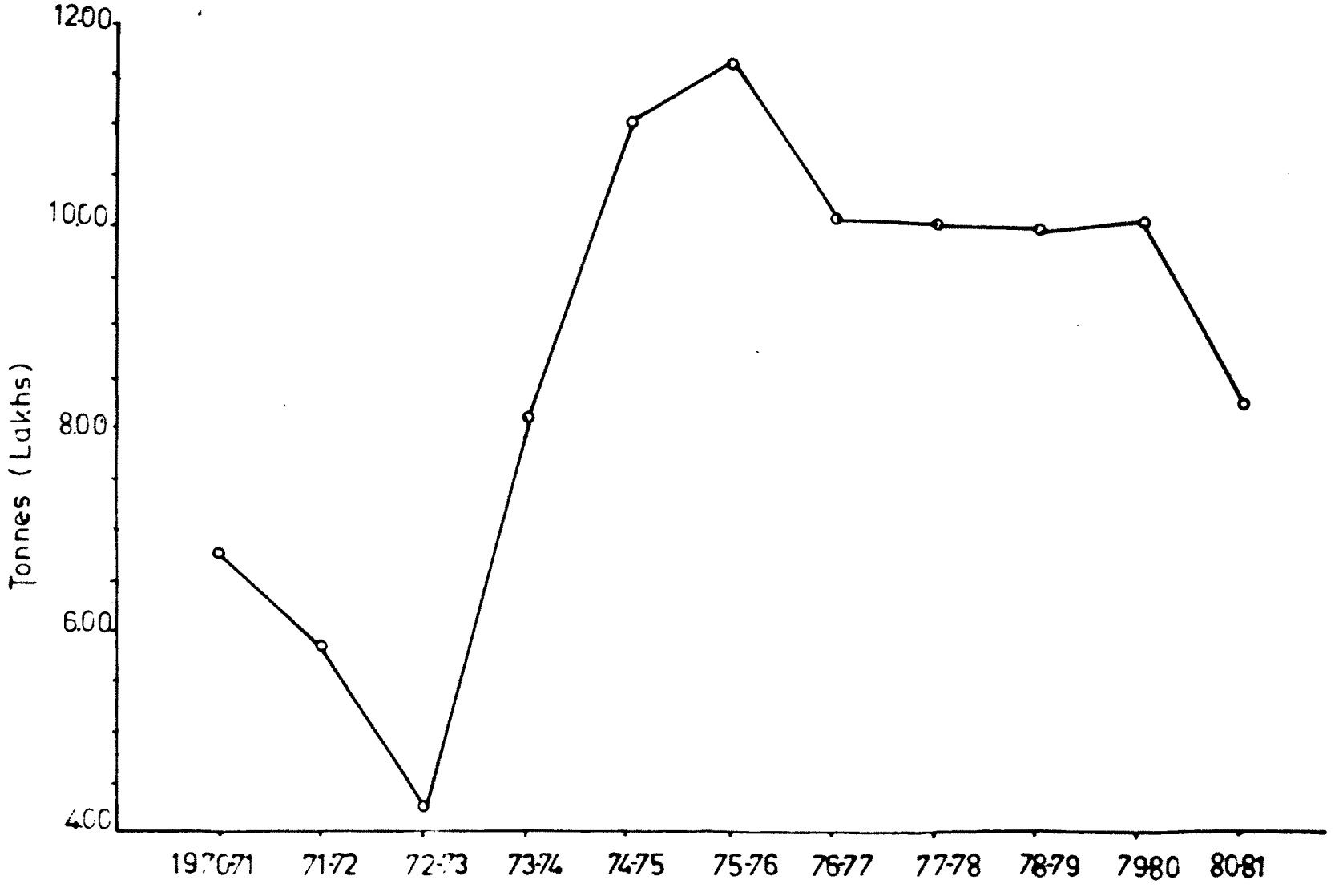
Tur moong, gram are the major pulses grown in the most parts of the state. Due to different agroclimatic condition in the state, the increase in production and productivity are not uniform in all parts. The per hectare production of Tur in 1970-71 was 432 Kg which was increased in 1980-81 only to 500 Kg per hectare. While per hectare

Table 4.3 Pulses Production in Maharashtra during 1970-71 to 1980-81 (00 MT Tonnes)

Year	Gram	Tur	Urid	Moong	Masur	Others	Total
1970-71	866	2711	1064	823	18	1248	6779
	(12.79)	(40.0)	(15.11)	(12.15)		(18.43)	
1971-72	1320	2277	744	512	22	1057	5932
1972-73	486	1802	730	542	12	630	4202
1973-74	1287	3223	1323	1062	28	1759	8682
1974-75	1436	3772	1602	1544	47	2697	1.1098
						(24.30)	
1975-76	1805	4078	1713	1665	41	2373	1.1675
	(15.46)						(72.45)
1976-77	1317	2940	1719	1910	43	2504	1.0435
				(18.30)			
1977-78	1470	3443	1722	1632	56	1797	1.0125
			(17.00)				
1978-79	1573	3992	1569	1504	48	1656	1.0342
1979-80	1734	4133	1470	1395	39	1625	1.0376
	(18.0)	(39.63)	(12.90)	(11.41)		(14.23)	
1980-81	1502	3593	1056	949	24	1183	.8312
% Increase	93.44	32.53	0.75	15.30	33.33	- 5.20	22.76

Figures in brackets indicate percentage share of the crop.

Pulses Production



production of gram in 1980-81 was 350 Kg as against 280 Kg per hectare in 1970-71. As a result of this low yield in spite of 20 percent of total area under food crops is occupied by pulses their production is only 13 percent of total production of food crops.

Amongst the various pulses kharif pulses occupy a major share both in terms of area and production and they are also grown as mixed as well as pure crops.

The perCapita availability in Maharashtra is 39 gms as against requirement of 85 gms in a balanced diet. To meet the demands of fast growing population the pulses production has to be increased by increasing per hectare yield.

During the period under study the total production of pulses had shown a small increase of 22.75 percent in 1980-81 over the base year 1970-71. In the year 1970-71 the production of pulses was 6,77,000 metric tonnes. This was increased to 8,31,200 metric tonnes in 1980-81. The production of them during 1974-75, 1975-76, 1976-77, 1977-78, 1978-79 and 1979-80. The production remained more than 10,00,000 metric tonnes. Among these year in 1975-76 pulses production was reached to its maximum 11,62,500 metric tonnes. Thus pulses have shown to be slow growth crops. (Table No. 4.3)

1) Gram -

Gram is the only pulse crop grown in rabi season. It is cultivated both in irrigated and rainfed conditions. The production and productivity both had increased during the period under study. The per hectare production of gram was 280 Kg/hect. in 1970-71 which was increased to 350 Kg/hect. in 1980-81. In 1970-71 the production of gram was 86,600 metric tonnes which was increased to 1,50,200 metric tonnes in 1980-81. This comes to 93.44 percent increase in its production. The year 1975-76 was the good year for gram have production of 1,80,500 metric tonnes.

2) Tur -

The total production of tur during the last 30 years never exceeded that of 1951-52. A similar trend was noticed in per hectare yield. The average perhectare production during 1951-52 was 8 quintals which decreased to 5 quintals during eithties. During the period under study the production of tur had shown 32.53 percent increase. In the year 1970-71 it was 2,71,100 metric tonnes which was increased to 3,59,500 metric tonnes in 1980-81. Its maximum production which accounted for 4,11,300 metric tonnes was observed in 1979-80.

3) Urid -

Urid is the only pulse crop which had shown a negative growth in its production by 0.75 percent. In 1970-71 the total production of urid was 1,06,400 metric connes. This

was decreased to 1,05,600 metric tonnes in 1980-81. During 1977-78 the maximum production of 1,72,200 metric tonnes was observed.

4) Moong -

Moong had also shown very poor performance. Its production in 1980-81 was increased by 15.30 percent over the base year 1970-71. In 1970-71 it was 82,300 metric tonnes which was increased to 95,000 metric tonnes in 1980-81.

III) Oil Seeds -

The average production of oil seeds is about 0.7 million tonnes per annum. By 1990 the population of Maharashtra is expected to 7.34 crores and the present day availability of edible oil from the oil seeds produced now will meet only about half the expected need. Hence the present production of oil needs to be almost double. Groundnut, Safflower, Sesamum, Sunflower form the major oil seeds of the state.

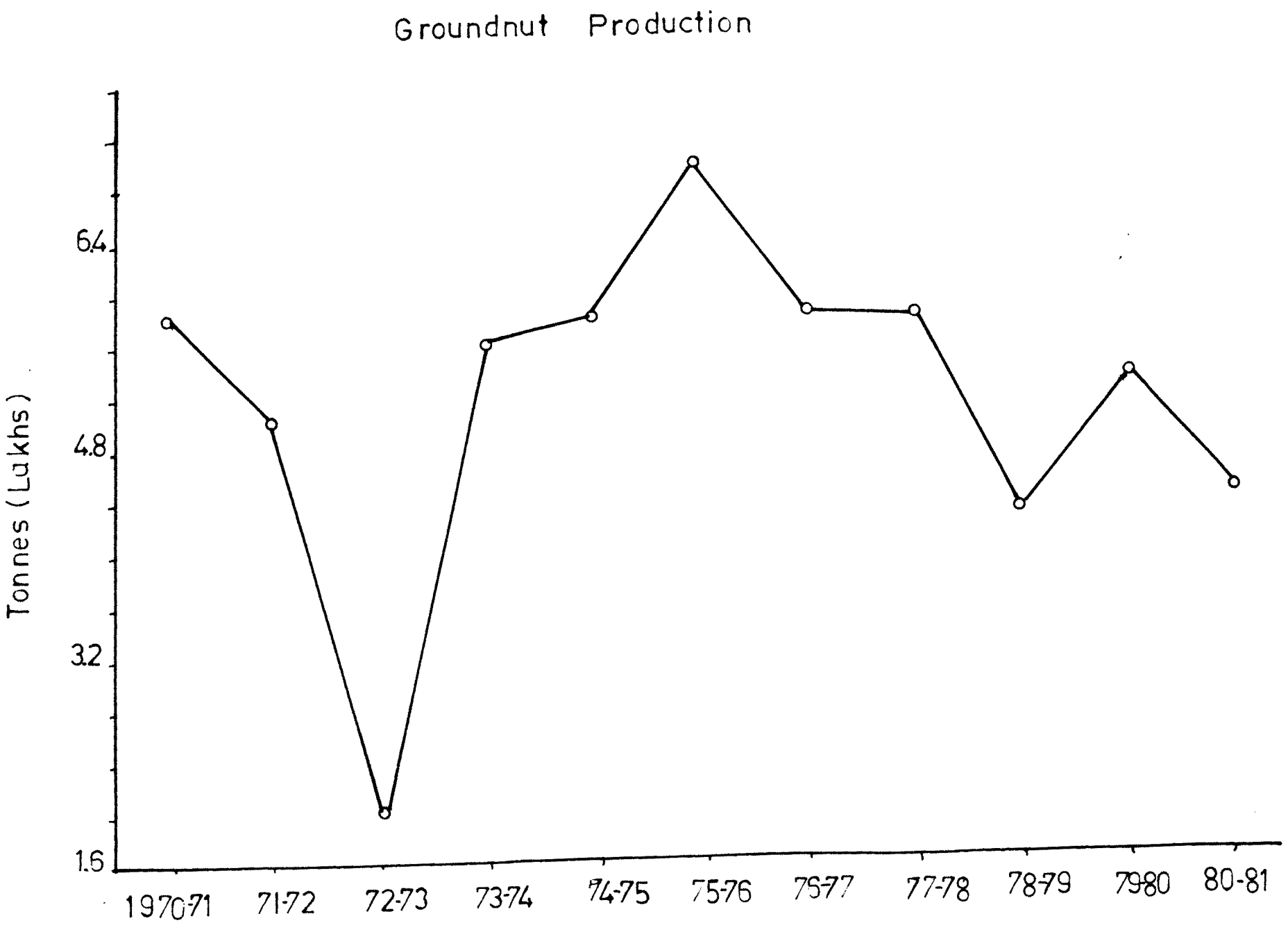
1) Groundnut -

Groundnut occupies the first place in production in Maharashtra. It is the cheapest source of vegetable oil and fats for the common man. However the average yield of groundnut in the state is much lower as compared to the all India average of 815 Kg/hect. The average yield in 1970-71 was only 650 Kg/hect. iwhich was increased to 810 Kg/hect. in 1975-76 again it declined to 620 Kg/hect. in 1980-81.

Table 4.4 Oil Seed Production in Maharashtra during 1970-71 to 1980-81 (In 00 MT Tonnes)

Year	Linseed	Sesamum	Groundnut pods	Rape & Mustard	Castor	Coconut 000' nuts	Niger	Other	Total
1970-71	314 (4.82)	178 (2.73)	5863 (90.11)	5 (0.07)	6 (0.09)	38900	140 (2.15)	N.A.	6506
1971-72	392	177	5045	6	7	40340	130	" "	5757
1972-73	304	224	2076	4	4	43840	40	" "	2652
1973-74	436	278	5637	8	10	45090	130	" "	6499
1974-75	729 (10.11)	390	5895	13	20	52400	160	" "	7207
1975-76	590	314	6925	10	12	54690	127	" "	7978
1976-77	572	310	5828 (84.95)	16 (0.23)	32 (0.46)	50635	102	" "	6860
1977-78	676	442 (8.52)	5784	11	13	49917	129	" "	7055
1978-79	602	521	4782	12	14	43290	180 (2.94)	" "	6111
1979-80	582 (9.49)	483 (6.54)	5380 (80.21)	13 (0.23)	15 (0.25)	57527	175	" "	6648
1980-81	522	360	4410	13	14	57527	179	" "	5498
% Increase	66.24	102.2	- 24.78	160.0	133.0	147.88	27.88		- 15.49

Figures in brackets indicate percentage share of the crop.


Groundnut Production
Tonnes (Lakhs)
6.4
4.8
3.2
1.6
1970-71
71-72
72-73
73-74
74-75
75-76
76-77
77-78
78-79
79-80
80-81

The output and yield of groundnut in the state behaved in erratic manner, rising above in some years, while falling substantially below in some years. The occurance of drought in 1972-73 hit hard, the output and yield of the crop in the state as it did ni cases of almost all the crops.

The decline in the output was the result of partly area contraction and partly yield depreciation. So with regard to output, some times it was the area of some other times was the yield that exerted the influence on the output and still some other times are both the area and yield that exerted the influence on the output.

For getting maximum per hectare yield it is essential to ensure the non cash inputs like timely sowing, optimum plant population in addition to cash inputs like fertilizers especially phosphates, lastely use of bacterial cultures had shown promise.

During the period under study the production of groundnut had shown negative growth by 24.78 percent in 1980-81 over the base year 1970-71. In 1970-71 the total production was 5,86,300 tonnes. It remained the same level upto 1977-78 except 1972-73 which was the lowest of 2,07,600 tonnes. After 1977-78 it had shown decline upto 4,41,000 tonnes in 1980-81. The year 1976-77 was the favourable year for the crop in which the maximum production of 5,82,800 tonnes was observed.(Table No. 4.4)

The production of Linseed, Sesamum, Mustard and Nigar had shown 66.24 percent, 102.2 percent, 160 percent and 27 percent respectively in 1980-81 over the base year 1970-71. In the year 1970-71 their production was 31,400 tonnes, 17,800 tonnes, 500 tonnes and 14,000 tonnes respectively, where as in 1980-81 it was 52,200 tonnes 36,000 tonnes, 13,00 tonnes and 17,900 tonnes respectively.

Sunflower had been introduced in recent year. Under rainfed conditions sunflower yields 6 to 8 quintal per hectare while under irrigation the yield level goes to 15 quintals per hectare.

Safflower occupies about 22 percent of total area under oil seeds in the state. It is grown over an area of 0.4 million hectares with an annual production of 0.15 million tonnes. The crop is drought tolerant and hence has great promise in drier region in medium to deep black soil.

The production of coconut had increased by 47.88 percent in 1980-81 over the base year. In 1970-71 it was 38,90,000 nuts which was increased to 57,52,700 nuts in 1980-81.

2) Castor -

With the increased demand from industry the drop is fatching good price and there is scope to increase the area under it and its production. In fact there is 133.33 percent

increase in its production in 1980-81 over the base year 1970-71. In 1970-71 its production was only 600 tonnes which was increased to 1,300 tonnes in 1980-81.

In addition to above edible oil seeds non edible oils of forest trees like Maheva (Moduca indica), Neem (Azadirecta indica), Karanj (Pongamia pinnata), Kokam (Garcinia indica), Sal (Shoren robusta) and Undi (Callophyllum inophyllum) etc. which cum very much replace part of the edible oils for industrial uses in the production of soap and cosmotics.

IV Sugarcane -

Sugarcane occupies a pride of place in the agricultural economy of state as it is one of the important commercial crops. The total value of the crop produced annualy is about Rs.1,000 crores. The sugar industry is the second largest in the country today involving 20 million farmers is providing employment to about 3 lakhs workers and technicians. The production of sugarcane in 1970-71 was 1,44,35,000 tonnes. It remained at the same level upto 1973-74 after which it shows an increasing trend upto 2,50,46,000 tonnes in 1977-78 being highest during the period under study. In the year 1980-81 the production again declined to 2,35,90,600 tonnes. Thus there was increase of 63.42 percent over the base year 1970.71 (Table No. 4.5)

Table 4.5

Sugar production in Maharashtra during 1970-71 to 1980-81.

Year	Interms of Dressed cane	Interms of Gur	Dressed cane used	Dressed cane used	Gur
1970-71	1,44,350	16,408	1,08,077	36,276	3,881
1971-72	1,26,391	14,287	1,04,141	22,250	2,287
1972-73	1,31,745	14,490	1,14,304	17,441	1,807
1973-74	1,41,332	15,435	1,04,666	26,666	3,914
1974-75	1,88,302	20,327	1,53,371	34,931	3,690
1975-76	2,05,444	22,186	1,61,457	13,987	4,668
1976-77	2,20,972	22,446	1,65,109	55,863	6,090
1977-78	2,50,460	27,744	2,15,082	35,378	3,854
1978-79	2,24,820	24,643	2,13,568	11,252	1,158
1979-80	1,98,193	21,074	1,51,063	47,130	4,944
1980-81	2,35,906	25,939	2,11,433	24,473	2,627
% Increase	63.42	58.08	95.63	- 3.25	-32.3

The general standard of cultivation and after care is much better in the South than North India resulting in higher tonnes and better recovery. Maharashtra stands first in recovery of sugar. In total sugar production and in average yield per hectare the state ranks fourth in the country. Based on the latest statistic nearly 70 percent. Sugarcane produced in Maharashtra is utilized for sugar manufacture as against 27 percent as all India basis. The remaining 30 percent of cane is used for gur production. In terms of gur the average yield per hectare was 9,833 Kg in 1970-71 which has slightly increased to 10,152 Kg/per hectare in 1980-81. Only in the year 1977-78 this was reached to 10,500 Kg per hectare.

For this the potential of canal irrigation is completely utilized. However, only 20 percent of the area under sugarcane receives canal irrigation and rest 80 percent has to depend for irrigation either on wells or lifts.

V Cotton -

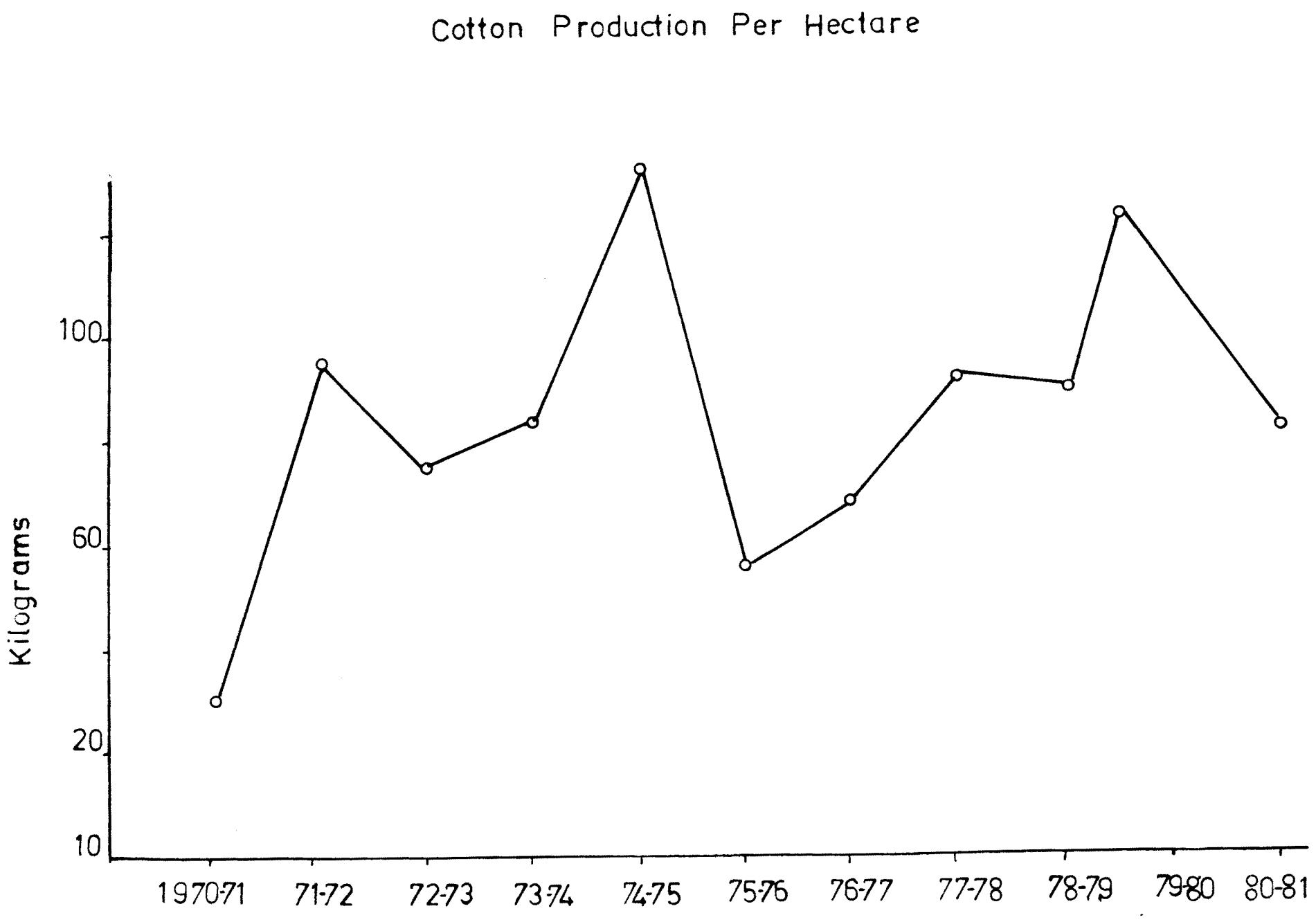
Cotton is the most important crop in the state. In terms of production however, Maharashtra accounted for about 14 percent of all India production in 1971-72. Comming to 5,46,900 tonnes. The Government of Maharashtra introduced the scheme of monopoly procurement of cotton in 1972-73 in that year the production was 5,46,900 tonnes, In 1974-75 it was 8,12,600 tonnes being the highest during the period.

Table No. 4.6

Fiber Production in Maharashtra during 1970-71 to 1980-81.
(In "00" MT Tonnes)

Year	Cotton		Sunhemp	Mesta	Total f
	Kapas	Lint.			
1970-71	4348	824	18	90	5280
	(82.39)				
1971-72	6239	2203	32	38	8550
1972-73	5469	1906	24	66	7531
1973-74	5351	1903	33	160	7607
1974-75	8126	2897	46	204	11477
	(70.80)				
1975-76	3869	1326	34	224	5453
1976-77	4054	1441	42	183	5720
1977-78	6185	2148	49	156	8538
1978-79	6397	2239	54	208	8898
1979-80	8114	2881	57	192	11244
	(72.10)				112.95
1980-81	6054	2157	47	215	8473
% Increase	39.23	151.77	161.1	138.88	

Figures in brackets indicate percent share of the crop.


Cotton Production Per Hectare
Kilograms
100
60
20
10
1970-71
71-72
72-73
73-74
74-75
75-76
76-77
77-78
78-79
79-80
80-81

After that the cotton production was fluctuating and at the end of the period in 1980-81 it was 6,05,400 tonnes. This accounted for about 40 percent in crores over the base year 1970-71. The per hectare production was 80 Kg on an average during the period.Table No. 4.6

VI T 1) Tobacco -

In the year 1970-71 the total production of tobacco was 9500 tonnes. Which was increased to 14,500 tonnes in the year 1979-80. This being the highest production during the period. During the last year of the period under study it declined to 12,300 tonnes. This cane to 32.55 percnet increase over the base year 1970-71.(Table No. 4.7)

2) Chillies -

As compared to other crops the performance of this crop in the long run seems to be rather satisfactory. In the year 1970-71 its production was 62,800 tonnes. There was increasing trend for another four years to 81,900 tonnes in 1974-75. Since there is the chilly production showed decreasing trend and reached to 77,100 tonnes. As compared to the year 1970-71 in 1980-81 there was 23 percent increase in its production.

Table No. 4.7

Production of Drugs - Narcotics and Condiments species in Maharashtra during 1970-71 to 1980-81. (In "00" MT Tonnes)

Year	Tobacco leaf	Tobacco stalk &	Dry Chilley	Dry Ginger	Turmuric	Aecanut	Total
1970-71	52	43	628	4	104	30	861:
	(6.03)	(4.99)	(72.93)		(12.09)		
1971-72	54	45	660	7	114	23	903:
1972-73	41	34	491	3	67	24	660:
1973-74	55	46	734	5	130	28	1073:
1974-75	50	42	819	6	125	31	1073:
			(76.33)				
1975-76	49	41	809	6	111	26	1042:
1976-77	73	61	715	4	80	27	960:
197		(6.35)					
1977-78	76	47	744	6	136	29	1018:
1978-79	76	62	761	6	153	25	1083:
					(14.12)		
1979-80	79	66	740	6	145	26	1062:
198	(7.43)	(5.45)					
1980-81	68	57	771	6	117	26	1045:
			(73.77)		(11.96)		
% Increase	30.75	32.55	22.77	50.00	12.50	-13.33	21.37

Figures in brackets indicate percentage share of the crop.

Horticultural Crops

Fruits and vegetables play an important role in the human diet. It has been reported that there is a considerable gap between the per Capita consumption of fruits and vegetables and the actual requirements. Per Capita requirements are 255 gms while the actual consumption is about 80 gms.

Althoggh the horticultural crops including vegetables occupy one percent of the total cropped area of the state, the production potential perunit area is much higher than o other crops. For example, average banana crop yields 50 tonnes per hectares, where as a rice crop under a H. Y. V. programme recorded an average of 3 tonnes. In otherwards, conversion ratio inputs and production is quite high and net economic returns are much more. Fruits and vegetables, not only give higher economic return per Unit area but also produce a high quantum of nutritive values such as carbohydrates, proteins, vitamine minerals and caloritic values as compared to cereals.

Considering the requirements of fruits and vegetables according to nutritional standards, there is a vast scope not only for increasing productivity of existing orchyards but also for increasing the area under their cultivation. Thus the present area under fruits and vegetables and also their production are too inadequate and hence prices of fruits and vegetables are comparatively higher in the market.

Table No.4.8 Statement Showing India's Export of the Fruits in 1972-73.

Sr. No.	Description	Export Tonnes	Export Value Rs.Lakh.	Sr. No.	Description	Export Tonnes	Export Rs. Lakhs
	Tropical-Sub tropical				Temperate		
1)	Cashewnut	66,278.00	6882.12	1)	Walnut	4721.68	283.62
2)	Mango	2,046.48	57.41	2)	Plums	3.96	0.05
3)	Tamarind	1,115.87	29.49	3)	Apricots	0.90	0.03
4)	Orange	282.00	19.06	4)	Apples	0.60	0.02
5)	Sapota	115.95	4.69	5)	Almand	0.22	0.02
6)	Pineapple	25.84	1.49	6)	Peaches	0.80	0.01
7)	Lemon	12.00	0.54	7)	Pistachio nut	0.01	0.01
8)	Date	2.59	0.31	8)	Bear	0.02	0.01
9)	Figs	2.52	0.12			4728.19	283.761
10)	Barries	7.61	0.09				
11)	Brapes	0.20	0.01				
		74,011.07	6995.41				

Source : Monthly statistics of Foreign Trades of mdia - 1: 1973

This leads to a wrong believe that fruits and vegetables are luxury items of food. To erase this believe a massive programme of increasing productivity of existing gardens and to exploit all the possibilities of extending their cultivation in suitable area, will have to be undertaken.

Dry land horticulture has also considerable scope in Maharashtra. Cultivation of certain fruit and vegetable crops can be resorted to in the vast rainfed areassof the state. Fruit crops such as annonas, amla, phalsa, ber, karwand, jambul, tamarind, wood apple, jack fruit etc. can be grown under rainfed conditions in suitable areas. It will be worth noting that 1116 tonnes of tamarid fruits exported during 1972-73 ehich fetched a foreign exchange worth rs Rs. 19 lakhs. Similarly vegetables such as chillies, french beans, wal, pawats, gawar and some leafy vegetables can also be grown under dry land conditions.

Since fruits and vegetables are highly perishable and cannot be stored for laong time, heavy production is always associated with sudden depression in price. As such the grower has no price guarantee. It is therefore suggested that this productivity programme should be associated with the development of agro-based industries which will not only case of market surplus but will also ensure against sudden fall in prices.

Horticultural crops including vegetables possess a high potential value as an export commodity, both as fresh

Table No. 4.9 Average Nutritional Values of Fruits & Cereals from one Hectare.

Crop	Average fruit/ pulp yield/ per hectare (tonnes)	Proteins Kg	%	Fats Kg	%	Minerals Kg	%	Carbohydrates Kg	%	Calorific
Fruits										
1) Mango	9.000	54.0	0.6	09.0	0.1	18.0	0.3	01062	11.8	45,00,000
2) Banana	40.000	520.0	1.3	80.0	0.2	280.0	0.7	14560	36.4	6,12,00,000
3) Grape	30,000	240.0	0.8	30.0	0.1	120.0	0.4	03060	10.2	1,35,00,000
4) Guava	19.000	285.0	1.5	38.0	0.2	152.0	0.8	02755	14.5	1,07,80,000
5) Santra	22.000	198.0	0.9	66.0	0.3	88.8	0.4	02332	10.6	1.0
Cereals										
1) Rice	5.000	335.0	6.7	35.0	0.7	40.0	0.8	3870	77.4	1,37,20,000
2) Jowar	4.000	416.0	10.4	76.0	1.9	72.0	1.8	2968	74.2	1,42,00,000
3) Wheat	3.500	413.0	11.8	52.0	1.5	55.0	1.5	2492	71.2	1,21,80,000
4) Maize	5 000	555.0	11.1	180.0	3.6	75.0	1.5	3310	66.2	1,71,00,000

Source : Health Bulletin No.3 Nutritional Research Lab. Coonoor.

and processed products. There is a considerable demand from other countries for fruits such as mango, cashew nut, banana and for vegetables such as onion, chillies, okra; Fresh and processed fruits and vegetsbles products are being expotted to U. K., Switzerland, U. S. A., U. S. S. R., Sweeden, Canada, Germany and Arabian countries. It will be seen from table 2 that there is a considerable amount of export of tropical and sub tropical fruits from the country as compared to temperate fruits. Among tropical fruits cahsewnut, mango, banana and tamarind fecthes foreign exchange worth 70 crores. while from temperate group walnut bring only 3 crores. This indicates considerable scope for export promotion of fruits from the state. It may be pointed out that since Maharashtra has various agro climatic zones, It is an ideal state for production of tropical and subtropical fruits and vegetables. It is therefore suggested that marketing and export organisation existing in the country should be stenghhened, so that surplus production of high quality fruits and vegetables could eassily find a way in the competitive marketing channels of other countries. (Table No. 4.8)

Production of quality mango, cahsewnut, pineapple, banana, and spice crops can be enhanced in the west coast region of Maharashtra. Warkas lands of Konkan region, in fact the assets which could be converted orchyards of quality mango and cahsewnut. Western up ghat area of the state receiving annual rainfall below 750 mm is idealy suitable for successful

Table No. 4.10 **Production of Vegetables - Fruits in Maharashtra during 1970-71 to 1980-81.**
(In "00" MT Tonnes)

Year	Banana	Mango	Grapes	Cashewnut	Potatoes	Sweet potato	Oranges	Onions	Total
1970-71	17,744 (56.65)	1,452 (4.53)	207 (0.66)	310 (0.98)	485 (1.54)	1068 (3.38)	704	9,356 (29.87)	1,31,318
1971-72	14,020	1,558	160	370	516	1060	836	6,127	24,647
1972-73	12,901	1,531	169	330	385	480	778	5,142	21,716
1973-74	13,348	1,597	150	340	473	510	823	8,519	25,760
1974-75	18,454	1,756	167	330	551	740	888	9,507 (29.56)	32,493
1975-76	19,416	1,954 (5.75)	323 (0.95)	610	653 (1.92)	715	894	9,360	33,915
1976-77	20,374	1,874	266	920	550	784	962	8,996	34,626
1977-78	21,654	1,874	266	920	502	865	962	8,808	35,851
1978-79	23,834 (64.24)	1,874	266	920	510	865	960	7,869	37,098 (18.45)
1979-80	22,436 (63.08)	1,874	266 (0.74)	920 (2.58)	502 (1.39)	865	960 (2.70)	7,746 (21.77)	35,569
1980-81	22,436	1,874 (5.26)	266	920	497	865 (2.43)	962	7,746	35,566
% Increase	25.44	29.06	28.50	196.77	2.47	-18.39	36.64	- 17.20	12.56

The figures in brackets indicate percentage share of the crop.

commercial production of fruits and vegetables such as grapes, citrus, pomegranate, guava, banana, onion, chillies, potato, tomato and okra, Vidarbha region is famous for Nagpur oranges of large consignments of fruits are exported to northern Indian markets. Districts such as Jalgaonm Dhule, Nanded and Parbhani also possess higher potential for production of fruits such as citrus, banana, grape and guava and vegetables such as chillies, onion, tomato and potato.

Quality seeds with viability and genetic identity is a prerequisite for agricultural production. Maharashtra is endored with a wide range of climatic and soil conditions. It is therefore, an ideal state for seed industry, absence of organised vegetable seed industry in the state is one of the reason for low production. Hence, it is suggested that a sound and strong vegetable seed production programme by suitable agencies shcuild be initiated. (Table No. 4.9)

1) Banana -

Maharashtra ranks third in the production of banana in the country considering per hectare production Maharashtra ranks first in the country which indicates a high potential for banana production in the state. The total production of banana in 1970-71 was 17,74,400 tonnes. There was steady increase in its production till 1978-79 with 23,83,400 tonnes while during 1979-80 and 1980-81 it was 22,43,600 tonnes. There was about 25 percent increase in banana production in 1980-81 over the base year 1970-71. (Table No.4.10)

Banana also is an export commodity.

2) Mango -

Mango is a rainfed crop. Because of fine quality of fruits. Alfanso has a great demand as fresh fruits and processed products such as canned slices and pulp within country and for export. The canning is done in big canning factories and an a small scale as home industries. This tree crop had shown very extension in terms of area as well as production with the period of ten years under study it had shown only 29.06 percent increase in 1980-81 over the base year 1970-71. The production of mango in 1970-71 was 1,45,200 tonnes which showed little rise during initial few years which accounted for 195400 tonnes in 1975-76. After this from 1976-77 to 1980-81 it remained more or less sustained at the level of 1,87,400 tonnes upto 1980-81.

3) Grape -

Maharashtra is the leading grape growing state in the country. With its production 20,700 tonnes in 1970-71. Which declined during 1971-72 to 1974-75 upto 15,000 tonnes. In 1975-76 the grape production reached its maximum of 32,300 tonnes. After this during successding years remain at the level of 26,600 tonnes which came to 28.56 percent increase over the base year 1970-71. About 40 percent area is under Thomson seedless which yields about 15 tonnes per hectare climate being very conginial. The yields are

the highest as compared to other state in country. Thus the production of grape is steadily increasing.

4) Cashewnut -

Cashewnut production in India is about 1,00,000 tonnes out of which 60,000 tonnes are processed in factories and 40,000 tonnes are consumed domestically out of the 60,000 tonnes processed 98 percent is exported. 1972-73 about 66,276 tonnes were exported which gave an income of Rs.68.82 crores. The domestic supply of raw nut is inadequate to meet the total requirement of processing factories.

5) Potato -

In Maharashtra potato ranks fourth among cultivated vegetables. Its production was 48,500 tonnes in 1970-71 which remained more or less the same throughout the period without showing any rise or fall.

6) Oranges -

The important citrus crops of Maharashtra are mandarin orange (Santra), Sweet orange (Mosambi) and Kagdi lime. The production of this crop had shown an increase by 36.64 percent in 1980-81 over the base year 1970-71. In the year 1970-71 it was 70,400 tonnes which increased to 96,200 tonnes in 1980-81.

Table 4.11

Production of Grass and Wood in Maharashtra during 1970-71 to 1980-81. (In "00" MT Tonnes & "00" Cubicmeters.

Year	Grass in Tonnes	Fire wood in cubicmeters	Industrial wood in cubicmeter	Total
1970-71	47,980	24,554	602	73,136
	(65.60)			
1971-72	54,319	25,624	628	80,571
		(31.80)	(0.77)	
1972-73	64,687	24,988	612	90,287
	(71.64)			
1973-74	41,983	24,718	605	67,306
1974-75	43,431	24,804	607	68,842
1975-76	42,834	25,459	623	68,916
1976-77	43,244	25,516	626	69,386
1977-78	43,244	25,516	626	69,386
1978-79	43,244	25,516	626	69,386
1979-80	43,244	25,516	626	69,386
1980-81	43,244	25,516	626	69,386
	(62.32)	(36.77)	(0.90)	
% Increase	- 9.87	3.91	3.98	- 5.12

Figures in bracket indicate percentage share of the crop.

Table No.4.12 Production of Byproducts in Maharashtra during 1970-71 to 1980-81
(In "00" MT Tonnes)

Year	Straw	Rice Bran.	Rice Husk	Cotton sticks	Sesamum sticks	Arhar sticks	Bagnesse	S.can thrash	Total
1970-71	1,24,051	1,411 (0.87)	4,395 (2.11)	13,611 (8.40)	501	2,609	873 (0.53)	14,435 (8.91)	1,61,886
1971-72	1,22,360	1,184	3,687	12,517	476	2,097	515	12,639	1,55,475
1972-73	1,13,407	642	2,000	12,590	539	2,085	407	13,175	1,44,735
1973-74	1,31,271	1,390	4,328	11,623	605	2,595	881	14,133	1,66,826
1974-75	1,28,274	1,243	3,871	12,359	704	2,554	830	18,830	1,68,665
1975-76	1,31,719	1,941	6,044	11,419	614	2,810	1,050	20,544	1,76,141
1976-77	1,34,657	1,691	5,267	10,703	649	2,655	1,370 (0.76)	22,097	1,79,089
1977-78	1,39,473 (74.83)	1,990 (1.08)	6,198 (3.33)	11,453 (6.14)	709	2,747	481	23,320 (12.51)	1,86,371 (15.12)
1978-79	1,36,100	1,868	5,819	12,417	726	2,811	260	22,482	1,82,483
1979-80	1,37,085 (73.12)	1,522	4,834 (3.33)	12,809	831	2,756	1,114	19,819	1,80,770
1980-81	1,33,710	1,957 (1.07)	6,096	13,202 (7.4)	775	2,931	591 (0.32)	23,591 (12.90)	1,82,859 (12.95)
% Increase	7.78	38.69	38.70	-3.00	54.69	12.57	-32.30	53.43	12.95

Figures in brackets indicate percentage share of crop

7) Onion -

The state occupies a unique position in the production of onion in the country. But unfortunately its production had shown negative growth during the period under study. In 1970-71 the total onion production was 9,35,600 tonnes. This was declined to 6,12,700 tonnes in 1971-72 and to 5,14,200 tonnes in 1972-73. It reached its maximum in 1974-75 upto 9,60,700 tonnes. Again it continuously declined every year upto 7,74,600 tonnes in 1980-81.

Crop losses due to Pests and Diseases

Maharashtra is the third biggest state in India having population of 6.14 crores 198081. The population is increasing every year. After 10 years i.e. in 1990 the population will be about 7.34 crores. The requirement of food for the present population is 109 lakh tonnes as against the present production of food grains at 75 lakh tonnes. Therefore there is a deficit of 34 lakh tonnes.

This deficiency is due to losses of food crops from pests damage (Table4.13). To control these losses we have a plant protection organization at the state level which supplies pesticides and appliances and undertakes plant protection compaigns. For increasing the efficiency of this organisation we have plant protection supervisory staff, field squads and

Table 4.13

Total avoidable losses due to pests in Endemic areas.

Sr.No.	Crop	Total loss in tonnes Average	
1	Rice	85,886	
2	Jowar	6,35,156	
3	Bajra	8,468	
4	Wheat	25,080	
5	Tur and Gram	18,637	
6	Pea	252	
7	Cotton	47,422	
8	Groundnut	33,749	
9	Turmeric	1,625	
10	Sugarcane	1,55,171	
11	Citrus	71,650	
12	Mango	14,911	
13	Arecanut	70	
14	Coconut	31	(Lakh nos.)
15	Beteluine	920	(Lakh leaves)
16	Grape	14,370	
17	Banana	57,050	
18	Chillies	20,752	
19	Onion	78,125	
20	Potato	3,238	
21	Tobacco	927	
22	Stored grains	9,90,000	
23	Field rats	26,320	
	Total	22,88,859	
	i.e. Rs.	487	Crores.

Table 4.14

Plant Protection work done (1961-62 to 1974-75)
Area in Acres

Sr.No.	Year	Seed treatment	Field treatment	Aerial spraying
1	1961-62	14,55,312	5,94,280	23,999
2	1962-63	12,80,500	6,42,663	2,276
3	1963-64	13,71,349	7,23,316	36,762
4	1964-65	94,04,000	19,40,000	47,000
5	1965-66	1,05,82,187	8,17,320	2,48,282
6	1966-67	53,74,595	9,40,627	1,37,004
7	1967-68	45,70,260	14,06,945	1,89,343
8	1968-69	59,15,348	23,28,820	1,48,169
9	1969-70	46,79,000	31,39,000	1,41,000
10	1970-71	62,36,000	45,45,000	3,18,000
11	1971-72	42,75,000	26,41,000	5,82,000
12	1972-73	47,85,000	2,72,000	75,000
13	1973-74	66,42,000	38,67,000	98,000

Table 4.15

Requirement of formulated Pesticides for 1975-76 to 1989-90 to Achieve the target food production at 143.15 lakh tonnes.

Sr.No.	Year	Pesticide requirements in tonnes	Expected increase in yield (Lakh tonne
1	1975-76	53,580	78.47
2	1976-77	57,400	83.09
3	1977-78	61,218	87.71
4	1978-79	65,034	92.33
5	1979-80	68,854	96.05
6	1980-81	72,672	101.57
7	1981-82	76,490	106.19
8	1982-83	80,108	110.81
9	1983-84	84,126	115.43
10	1984-85	87,946	120.05
11	1985-86	91,764	124.67
12	1986-87	92,558	129.29
13	1987-88	99,400	133.91
14	1988-89	1,03,218	138.53
15	1989-90	1,07,036	143.15

advisory mobile units. In addition to this certain measures have been suggested. These suggestions include the strenghening of the paste surveillance, supply of pesticide and appliances at village level, training of men and women in villages, protection of stored grams, ecouraging commercial plant protection organisation, screening of pesticides before introducing into the market, release of new varieties after plant protection testing, supply of literature and adequate arrangements for pesticides in future.

Table No. 4.16 Perhectare Production of some main crops (In Kilograms)

Sr. No.	Year	Rice	Jowar (Kharip)	Jowar (Rubbi)	Bajra	Tur	Wheat	Gram	Cotton	Gur	Ground -nut	Tobacco	%
1	1970-71	1229	350	212	404	432	542	281	30	9833	650	448	24.75
2	1971-72	1041	473	220	201	451	506	305	87	9283	604	-	271.5
3	1972-73	568	364	138	158	360	353	188	75	8814	254		172.7
4	1973-74	1212	467	460	384	517	567	367	81	8845	746	445	10.0
5	1974-75	1079	813	453	320	612	796	530	116	10103	737	481	
6	1975-76	1615	817	365	310	604	1026	404	58	9718	810	441	
7	1976-77	1351	956	425	385	459	789	315	67	9850	654	573	
8	1977-78	1563	1086	473	369	521	792	312	93	10499	682	518	
9	1978-79	1069	1035	502	342	591	802	342	89	10096	602	578	
10	1979-80	1231	1102	540	425	621	864	383	111	9493	744	552	
11	1980-81	1570	1200	600	445	500	864	350	81	10152	619	571	
% Increase		24.25	271.5	172.7	10.0	39.5	60.2	25.0	166.0	32.0	- 5.0	26.66	