CHAPTER - FIVE

CHAPTER V

UNEVEN GROWTH RATES OF BOTH IRRIGATED AND RAINFED CASH CROPS .

Despite the fact that the drought prone areas are predominated by the cultivation of cereals and pulses, some cash crops like groundnut , safflower , sugarcane and cotton are also grown. A study of drought prone area can not be comrehensive unless one takes into account the changes that have occurred on these fronts over a relatively longer period of time. Even in the drought prone area the cropping pattern as such may not remain stationary over a considerably longer period of time. In what follows in this chapter , we intend to analyse the changes of the above individual crops in respect of their area; productivity and production changes over the period under reference.

5.1 AREA , PRODUCTIVITY AND PRODUCTION OF GROUNDNUT .

Of the various edible oil seed crops groundnut and safflower are the major important crops grown in the district. These crops could be considered as commercial crops because a substantially larger proportion of total output is meant for sale. In the dryland farming these crops are mainly rainfed crops. Groundnut is the Kharif crop and as such the variations in its area are largely governed by the South West monsoon's precipitation. Because of that the percentage area under groundnut has decreased from

5.2 4.9 (at 1950-53 average) to 2.07 (at 1982-85 average). Between 1950-51 and 1965-66 the area under groundnut more than doubled. As area index moved to 211.49 the annual compound growth rate of area worked out to be 3.38 per cent. As against this area growth , the productivity declined at the rate of -1.06 per cent p.a.compound which affected the production growth rate. The area growth rate being substantially higher, it compensated more than the loss caused by decrease in the yield and helped push the production growth rate to 2.28 per cent p.a.compound. In the next sub period i.e.1966-67 onwards we find the decrease in the area under groundnut which is rather more pronounced. This is substantiated by the area growth rate which worked out to be -6.35 per cent p.a.compound.So from this we can conclusively point out that the area under groundnut in the district has been on the decline. On the productivity front however, we have rather satisfactory positive growth rate viz.4.38 per cent p.a.compound. But unfortunately this improvement in the yield could not compensate more than the loss in the production caused by the loss in the area. Therefore, the production growth rate works out to be -2.08 per cent p.a.compound.The main cause of the improvement in the productivity has been an increasing proportion of the total area under groundnut towards the cultivation of crop with the help of well and canal irrigation. Generally the productivity of the crop improves with suffieient irrigation and application of improved seeds and fertilizers. This has

5.3 been happening in the irrigated pockets of the district.

Looking at the long term growth rates we realise that the groundnut has been losing its area and also production by -4.36 and -3.47 per cent p.a.compound respectively. The only thing to be noted is that over the period,the productivity of the crop has been increasing by a little less than 1.0 per cent p.a.compound.(to be exact 0.92 per cent.) The positive increase in the yield could be attributed to the better management of the resources where the crop is cultivated with irrigation. Incidentally the cultivation of crop has been emerging as a summer crop where irrigation facilities have been developed in recent years .In view of the faster contraction of the groundnut area and consequent short fall in the output of oil seeds the government has launched upon a system of economic incentives (namely liberal grants for the extension of area under the crop)to the farmers. But somehow farmers have not responded to the economic incentives due to lack of sufficient water during the summer season.

5.2 AREA , PRODUCTIVITY AND PRODUCTION OF SUGARCANE .

As compared to other crops sugarcane is highly water intensive and long duration crop. Sugarcane cultivation is possible only in perennially irrigated areas.Though Solapur district is a predominantly dry farm area, with the development of irrigation potentiality in the district, the

5.4 the area under sugarcane has been continuously increasing. In the beginning of the period the relative share of the sugarcane area in the district was less than 1 per cent i.e. 0.6 per cent (average of 1950-53).By the end of the period it increased to 8.22 per cent (1982-85 average) in the GCA of the district.

By looking at the area index number costructed (assuming 1950-51 to be base year) for the whole period one can see that sugarcane area in the district more than trebled. The area expansion under it was the sole result of the development of irrigation potential by different sources in the district. During the first two decade 1950s and 1960s extension of sugarcane cultivation took place very rapidly. During the first sub period, the rate of area expansion worked out to be 4.60 per cent p.a.compound. This area expansion occurred mainly because of the development of canal irrigation the major source of which is Neera right bank canal. This source of irrigation benefits mainly Malsiras and western part of Pandharpur taluka and therefore one finds nearly one half of the total area under cultivation in the district is being concentrated in the whole of Malsiras taluka and a part of Pandharpur taluka. Besides the perennial source of irrigation the class of the malies who are well known for the cultivation of irrigated land and especially sugarcane cultivation, is responsible of rapid extension of the sugarcane cultivation to the perennially irrigated lands. In the first two decades,

5.5 the productivity of the sugarcane reveals no improvement at all. During our first sub period 1950-66 on the contrary, there has been a decline in the productivity at -0.03 per cent which is a marginal rate of decrease causing no adverse effect on the production of the crop. In other words, the productivity remained almost stagnant.The production growth rate is just equal to area growth rate i.e.4.56 per cent p.a. compound. The high growth rate of area expansion and consequent production growth were induced by the establishment of co-operative sugar factories.These co-operatives were established with the financial assistance of the government of Maharashtra and the initiative taken by some political leaders like late Shankarrao Mohite Patil who could be regarded as a pioneer in the field of sugar co-operatives of the district. More than half (four in number)of the total number of sugar factories are located in this area which could be considered as sugarcane belt of the district. It is but natural that the sugar industry being weight lose industry, that the co-operative sugar factories must locate and also localise in the close vicinity of the supply of raw materials , here the sugarcane. In Malsiras taluka alone three co-operative sugar factories are localised and roughly more than three fourth of the cultivated area is under sugarcane cultivation. One can therefore say that the expansion of sugarcane area induced the establishment of co-operative sugar factories and vice versa in turn.

The next sub period witnesses a slow down in the area expansion of sugarcane cultivation.The expansion occurred

5.6 at the rate of little less than one percent i.e.0.98 per cent compound.Strangely enough the productivity growth rate worked out to -0.55 per cent p.a.compound higher than that registered during the preceding period .As a result,the production of the sugarcane increased at the rate of just 0.42 per cent p.a.compound. The productivity growth rate makes one to arrive at a paradox.Despite the introduction of high yielding strains of sugar plant ,application of improved chemical fertilizers and assured irrigation insufficient quantity the yield growth rate seems to be far from satisfactory. Hence the output growth was mainly responsible for expansion of area under cultivation. The long term growh rates of area expansion productivity and production worked out to be 2.98 per cent,0.60 per cent and 3.58 per cent p.a.compound respectively.The output growth could be ascribed to area increase in a rather larger proportion, than the proportional increase of yield.The long term sugarcane area expansion rate could be ascribed not to perennial irrigation sources but also to some other factors such as the change in relative price structure in favour of sugarcane and also the prices paid by the sugar factories which are free from violent fluctuations induced by changes in the supply of and demand for agricultural products.One can not neglect the role played by these two factors in the area expansion of the sugarcane.We therefore conclude that, since the sugarcane enjoys the price advantages in its various aspects over other crops,normally grown in the irrigated area the farmers are prone to expand

5.7 the area under sugarcane cultivation and continue with the same pattern of crops.Incidentally the sugarcane cultivation has converted irrigated pockets of the district into economically prosperous areas.The change in the crop pattern resulted in the establishment of agrobased industries especilly sugar co-operatives which triggerred the development of service sector mainly transport,banking, insurance,education, and to some extent hotelling .In contrast with the major dry portion of the district , the prosperous irrigated areas of the district may be compared to oasis(in the deserts). Moreover, because of uneven development of irrigation sources the intra district inequalities in respect of economic development have occurred and have become more prominent and striking .Therefore, the need arises to accelerate the rate of development of irrigation projects and the dry farm technology

5.3 AREA , PRODUCTIVITY AND PRODUCTION OF COTTON

Cultivation of cotton as a purely commercial crop was in vogue even long before 1950-51.Before the development of irrigation it was cultivated during the Kharif season and that too as a mixed crop alongwith tur.Before the emergence of sugarcane in the irrigated pocket of the district,cotton was the main cash crop to the vast majority of the farmers in the district.In the beginning of the period the proportion of the area under cotton formed less than one per cent i.e. 0.76 per cent to the gross cropped area of the district. (1950-53 average)

5.3 Even by the end of the period it did not exceed even one per cent i.e.0.96 per cent to the gross cropped area. (1982-85 averages) During the first period of our study the area under cotton in the district grew at the rate of 2.05 per cent p.a.compound.Even during this period it was cultivated as Kharif crop and a mixed crop .With the extension of the area the productivity of the crop decreased at the rate of -1.83 per cent p.a.compound,during the period under review.Decline in the productivity was mainly on account of uncertainty of the rainfall and traditional cultural practices. Because of the decline of the productivity,the production growth rate was just 0.19 per cent p.a.compound,which could be considered as a just marginal rate of increase caused by the expansion of the area slightly higher than the contraction in yield of the crop.During the subsequent period quite strangely enough the rate of growth of area remained exactly the same as it was registered during the preceding period i.e. 2.05 per cent p.a.compound.The productivity of the crop during this period despite the frequent occurrances of drought, improved.The yield growth rate registered during this period amounted to 1.77 per cent p.a.compound.The production of the crop increased considerably over this period.The area expansion under cotton during the latter part of the whole period took place on account of the diversion of irrigated lands to cultivation of cotton.When we compare area under sugarcane and area under cotton,we notice that the sugarcane area growth

5.9 rate slowed downto less than one per cent i.e.0.98 per cent p.a.compound.So the growth rate of the area under cotton continued to be the same and higher than that of sugarcane area.That means farmers in the irrigated pocket revealed their preferences for the cultivation of cotton rather than for the cultivation of sugarcane.The expansion in the cotton area could be accounted for by some other factors such as the favourable changes in the relative price structure of the agricultural products and launching of monopoly cotton procurement scheme by the Govt.of Maharashtra,which aims at giving remunerative prices for cotton growers.Of course the issue of the remunerative prices is controversial on which we do not want to comment here.But we may point out that expansion of irrigation,changes in relative price structure in favour of cotton and the increase in the yield per hectare contributed to the expansion of the cotton area in the district.One more fact of which a note should be taken here is that with the development of irrigation cultivation of cotton ceased to be Kharif cultivation and has turned out into a summer cultivation as it has happened in the case of groundnut cultivation.Cotton is sown in the last week of April and first week of May with the irrigation and harvested in the latter half of the September, and first half of the October.The another advantage of summer cultivation of this crop is that immediately after harvesting of the cotton ,with lapse of some interval necessary for preparing the land , the same could be used for the cultivation of either gram or wheat during the Rabbi season .The improvement

5.10 in productivity could not be attributed to new varieties of cotton such as H-4 and Varalaxmi which did not become established in the district owing to their vulnerability to different types of diseases and insects. Therefore one can notice a reversal to the traditional varieties such as jarila, cambodia which have proved to be more productive as they have strong resistance capacity to different types of diseases and insects. With the improved cultural practices, assured irrigation and favourable changes in the relative price structure seem to have induced the farmers to expand the area under cotton especially in the north part of Solapur district covering the area of Mangalwedha , Madha , Sangola and Malsiras talukas.

Though the short term growth rate of area seem to be impressive, the long term growth rate of area under cotton for the whole period worked out to be 0.14 per cent p.a. compound. This growth rate could be considered as a quite marginal growth whose contribution in the output growth might be quite insignificant over the long period of time. The long term growth rate of yield, however , is much more satisfactory and it works out to be 2.68 per cent p.a.compound which is solely responsible for the output growth rate which remained at 2.86 per cent p.a.compound, over the period under review. The expansion of area under cotton , improvement in the yield and consequent higher growth rate of output have resulted in the establishment of two spinning mills on co-operative basis . One at Madha and another at Sangola which are expected

5.11 to generate employment opportunities in the tertiary sectors like trade, commerce etc. in the economy of the district.

5.4

Looking at the behaviour of the area, production and productivity of major cash crops grown in Solapur district, we arrive at the following conclusions.

I) Groundnut has been losing its area and consequently its output at the rates , -4.36 and -3.47 per cent p.a. compound respecively . In the dry portions of the district the cultivation of groundnut largely dependent upon the vagaries of monsoon is the process of being dropped out of the cropping pattern of district as a whole. The area under groundnut one can find mainly in the irrigated pockets and during the summer season. The yield of the groundnut also has not been encouraging to the farmers, so that the decline in the area under groundnut could have prevented.

II) The most important fact that the output growth of sugarcane in the district is mainly because of sugarcane area growth. Roughly there is a one to one correspondence between area growth and output growth as far as the sugarcane cultivation in the district is concerned. Despite assured irrigation facilities application of large doses of fertilizers and the large capacity of the sugarcane plants to withstand the various types of diseases there has been no improvement in the

5.12 productivity which in point of fact could have largely contributed to the output growth. On the contrary one can notice the declining yield growth rate during the shorter period and it is the matter for concern to the agricultural scientists and even to the policy makers.

III) The another fibre crop i.e.cotton grown in the Solapur district has achieved satisfactory growth rates in respect of all its variables under our study. Area under cotton expanded, productivity improved, despite the failure of new varieties to establish and a substantially higher output growth rate achieved during the latter part of the period under review.

In the irrigated areas amounting to 11 per cent of all the total cultivated area, the cash crops have encroached upon the food crops and the cotton and sugarcane have become the dominant irrigated cash crops of the farmers. As against this, in the dry portions of the district the performance of major cereal i.e.Rabbi jawar has not been satisfactory in respect of its all the three variables. The other cereals like bajara and wheat have shown better performance when compared with that of jawar. But unfortunately the area occupied by these crops form very little portion of the cropped area of the district and as such their better performance may not help improve the economic conditions of the farmers in the dry areas.

IV) Considering the above points and uneven distribution of

5.13 irrigation, the intra district inequalities in respect of economic development have become accentuated.

TABLE NO. 5.1

Annual Compound Growth Rates of Area , Productivity and Production of principal cash crops in Solapur District .

PERIOD - 1950-85 .

Sr.No.	'CROPS	PERIOD	AREA	PRODUCTIVITY	PRODUCTION
1	Groundnut	1	3.38	-1.06	2.28
		2	-6.35	4.38	-2.08
		3	4.36	0.92	-3.47
2	Sugarcane	1	7.65	-6.41	0.74
		2	0.98	-0.55	0.42
		3	2.98	0.60	3.58
3	Cotton	1	2.05	-1.83	0.19
		2	2.05	1.77	4.07
		3	0.14	2.68	2.86

TABLE NO. 5.2

Index Numbers of Area, Production and Yield of Groundnut in Solapur District.

(Area in Hectares , Production in Metric Tonnes ,and Yield in Kg./Ha.)

PERIOD:- 1950-1985.

YEAR	AREA	PRODUCTION	YIELD
1950-51	38542 (100%)	35200 (100%)	913 (100%)
1951-52	55425 (143.80)	33200 (94.31)	599 (65.60)
1952-53	73198 (189.91)	24700 (70.17)	337 (39.91)
1953-54	68866 (178.67)	38200 (108.52)	555 (60.67)
1954-55	85586 (221.83)	71800 (203.97)	840 (91.89)
1955-56	85384 (221.53)	45200 (128.40)	529 (57.94)
1956-57	85445 (221.69)	58500 (166.19)	685 (75.02)
1957-58	88663 (230.04)	42955 (122.03)	484 (53.01)
1958-59	76194 (197.69)	20931 (59.49)	257 (30.12)
1959-60	108663 (281.93)	83000 (235.79)	764 (83.57)
1960-61	92428 (239.81)	51965 (147.62)	562 (61.55)
1961-62	94065 (244.05)	55781 (158.46)	593 (64.95)
1962-63	86773 (225.13)	51500 (146.30)	594 (64.95)
1963-64	88176 (228.77)	61000 (173.29)	692 (75.68)
1964-65	85225 (221.12)	50904 (144.61)	597 (65.38)
1965-66	81630 (211.79)	30600 (86.93)	375 (40.96)
1966-67	73035 (189.49)	38811 (110.25)	531 (58.15)
1967-68	74574 (193.43)	34800 (98.86)	467 (51.15)
1968-69	82673 (214.50)	50300 (142.89)	608 (66.59)
1969-70	76219 (197.75)	37100 (105.39)	487 (53.34)
1970-71	78238 (202.99)	45300 (128.69)	579 (63.41)
1971-72	39263 (101.82)	9900 (28.12)	252 (27.60)
1972-73	7368 (19.11)	2300 (6.53)	312 (34.17)
1973-74	18430 (47.17)	15800 (44.88)	857 (93.86)
1974-75	24099 (62.51)	11000 (31.25)	456 (49.94)
1975-76	27900 (72.44)	22100 (62.79)	792 (86.74)
1976-77	35719 (92.67)	20900 (59.37)	585 (64.07)
1977-78	31532 (81.81)	20200 (57.38)	640 (70.09)
1978-79	23409 (60.68)	15600 (44.31)	666 (72.94)
1979-80	23750 (61.62)	19600 (55.68)	825 (90.36)
1980-81	31103 (80.69)	15900 (45.17)	511 (55.96)
1981-82	21814 (56.59,	10100 (28.69)	463 (50.71)
1982-83	30089 (78.06)	40500 (115.05)	1346 (147.42)
1983-84	17094 (44.35)	14000 (39.77)	819 (89.70)
1984-85	28700 (74.47)	39700 (112.78)	1383 (151.47)

SOURCE :- as in Table No. 4.3

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TABLE NO. 5.2

Index Numbers of Area , Production and Yield of Sugarcane in Solapur District.

(Area in Hectares , Production in Metric Tonnes , Yield in Kg./Ha.)

PERIOD :- 1950-85 .

YEAR	AREA	PRODUCTION	YIELD
1950-51	6194 (100%)	45700 (100%)	7378 (100%)
1951-52	7368 (118.95)	47400 (103.71)	6433 (87.19)
1952-53	7368 (118.95)	68400 (149.67)	9283 (125.82)
1953-54	6680 (107.84)	38000 (83.15)	5688 (77.09)
1954-55	7125 (115.03)	39200 (85.77)	5502 (74.55)
1955-56	7530 (121.56)	47400 (103.71)	6295 (85.32)
1956-57	7327 (118.29)	43300 (94.74)	5910 (80.08)
1957-58	8582 (138.55)	3184 (69.63)	3708 (50.24)
1958-59	9230 (149.01)	27165 (59.44)	2943 (39.88)
1959-60	10445 (168.63)	30890 (67.59)	2957 (40.07)
1960-61	9837 (158.81)	29027 (63.51)	2951 (39.98)
1961-62	10245 (165.40)	74984 (164.07)	7318 (99.18)
1962-63	10293 (166.17)	78400 (171.55)	7617 (103.22)
1963-64	10090 (162.89)	93000 (203.50)	9217 (124.92)
1964-65	11732 (189.40)	89412 (195.64)	7621 (103.29)
1965-66	13941 (225.07)	97163 (212.61)	6970 (94.47)
1966-67	11081 (178.89)	73152 (160.07)	6602 (89.48)
1967-68	10512 (170.03)	85800 (187.74)	8147 (110.42)
1968-69	13007 (209.99)	94100 (205.90)	7234 (98.04)
1969-70	14299 (230.85)	92400 (202.18)	6462 (87.58)
1970-71	13599 (219.55)	117700 (257.54)	8655 (117.30)
1971-72	14737 (237.92)	8900 (19.47)	6039 (81.85)
1972-73	14343 (231.56)	49900 (109.13)	3479 (47.15)
1973-74	14597 (235.66)	73800 (161.48)	5055 (68.51)
1974-75	15299 (246.99)	134700 (294.74)	8804 (119.32)
1975-76	21900 (353.56)	185000 (404.81)	8447 (114.48)
1976-77	20164 (325.54)	180500 (394.96)	8951 (121.32)
1977-78	18389 (296.38)	180500 (394.96)	9815 (133.03)
1978-79	18207 (293.94)	177700 (388.84)	9760 (132.27)
1979-80	17963 (290.00)	143200 (313.34)	7971 (108.03)
1980-81	20836 (336.39)	182600 (399.56)	8763 (118.77)
1981-82	24290 (392.15)	19700 (43.10)	811 (10.99)
1982-83	29100 (473.03)	284100 (621.66)	9696 (131.41)
1983-84	30200 (487.56)	243900 (533.69)	8076 (109.49)
1984-85	1853 (29.91)	14800 (32.38)	7985 (108.22)

SOURCE:- As in Table No. 4.3 .

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TABLE NO. 6.4

Index Number of Area , Production and Yield of Cotton in Solapur District.

(Area in Hectares , Production in Metric Tonnes , Yield in Kg./Ha.)

PERIOD :- 1950-1985 .

YEAR	AREA	PRODUCTION	YIELD
1950-51	5060 (100%)	3000 (100%)	593 (100%)
1951-52	13927 (275.23)	17100 (570.00)	1227 (207.26)
1952-53	7125 (51.15)	4200 (140.00)	589 (99.49)
1953-54	6842 (135.21)	9300 (310.00)	1359 (229.56)
1954-55	12105 (239.22)	7700 (256.66)	636 (107.43)
1955-56	17854 (352.84)	8000 (266.66)	448 (75.67)
1956-57	14979 (296.02)	7850 (261.66)	524 (88.51)
1957-58	15141 (299.22)	4331 (144.36)	286 (48.31)
1958-59	11943 (236.02)	5465 (182.16)	458 (77.19)
1959-60	12631 (249.62)	14600 (486.66)	1155 (194.77)
1960-61	12287 (242.82)	10032 (334.40)	816 (137.83)
1961-62	13036 (257.62)	10700 (356.66)	821 (138.51)
1962-63	11029 (217.96)	14300 (476.66)	1296 (218.91)
1963-64	13679 (270.33)	16400 (546.66)	1198 (202.36)
1964-65	11215 (221.64)	1500 (50.00)	133 (22.46)
1965-66	8219 (162.43)	5300 (176.66)	644 (108.78)
1966-67	6757 (133.53)	6300 (210.00)	932 (157.43)
1967-68	11478 (226.79)	18400 (613.33)	1603 (270.32)
1968-69	10074 (21.22)	12800 (426.66)	1270 (214.16)
1969-70	10703 (211.52)	10400 (346.66)	972 (164.02)
1970-71	10368 (205.29)	10400 (393.33)	1001 (168.80)
1971-72	15233 (301.04)	13200 (440.00)	867 (146.28)
1972-73	5782 (114.26)	11900 (396.66)	2058 (347.63)
1973-74	4982 (98.45)	4400 (146.66)	883 (149.15)
1974-75	10311 (203.77)	10300 (343.33)	999 (168.58)
1975-76	7169 (141.67)	11600 (386.66)	1618 (273.31)
1976-77	9998 (197.58)	6100 (203.33)	610 (103.04)
1977-78	11803 (233.26)	8000 (266.66)	677 (114.35)
1978-79	10810 (213.63)	11200 (373.33)	1036 (175.00)
1979-80	11600 (229.24)	17800 (593.33)	1534 (259.12)
1980-81	17293 (341.75)	23800 (793.33)	1376 (232.43)
1981-82	13603 (268.83)	22500 (750.00)	1654 (279.39)
1982-83	11096 (219.28)	17100 (570.00)	1541 (260.30)
1983-84	12349 (244.05)	19800 (660.00)	1603 (270.32)
1984-85	11722 (231.66)	18450 (615.00)	1573 (265.26)

SOURCE:- As in Table No. 6.3 .

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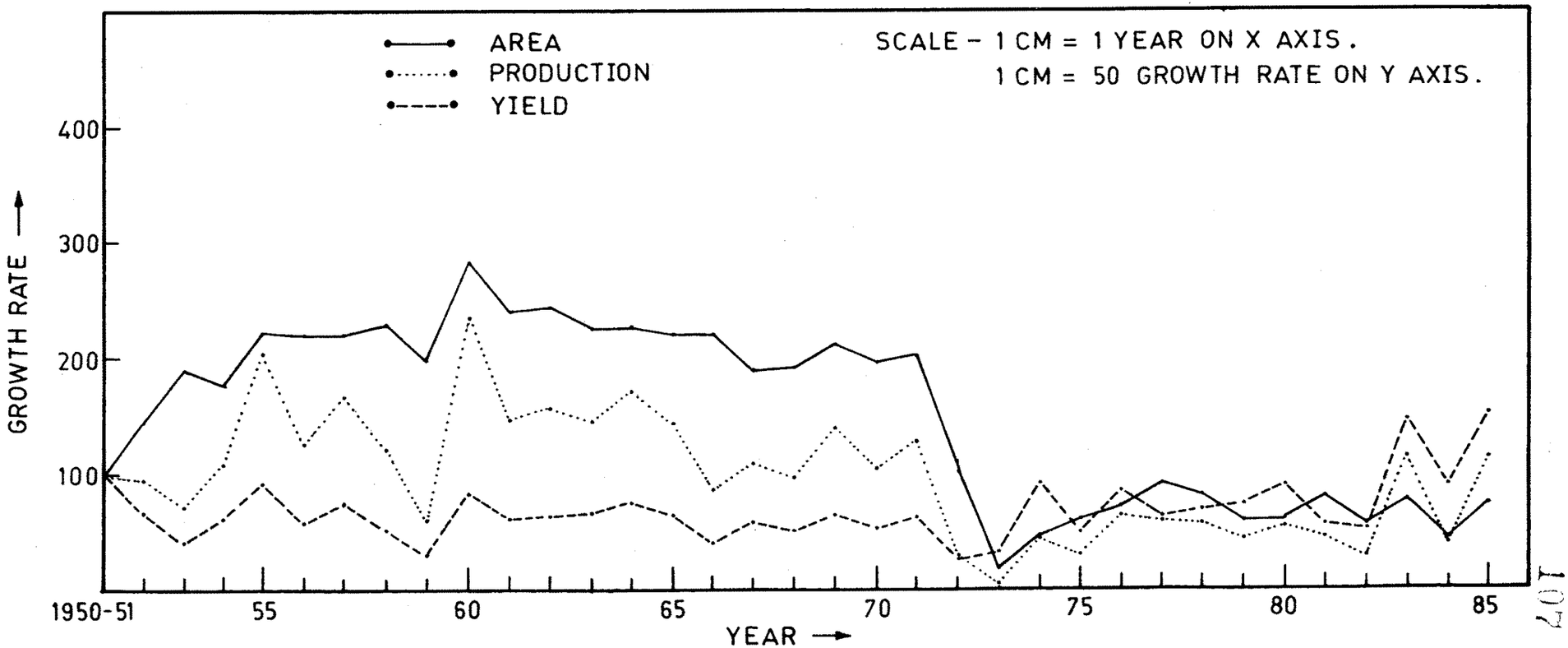

FIG. 5·1 - GRAPH SHOWING THE VARIATIONS OF AREA, PRODUCTION AND YIELD OF GROUNDNUT IN SOLAPUR DISTRICT.

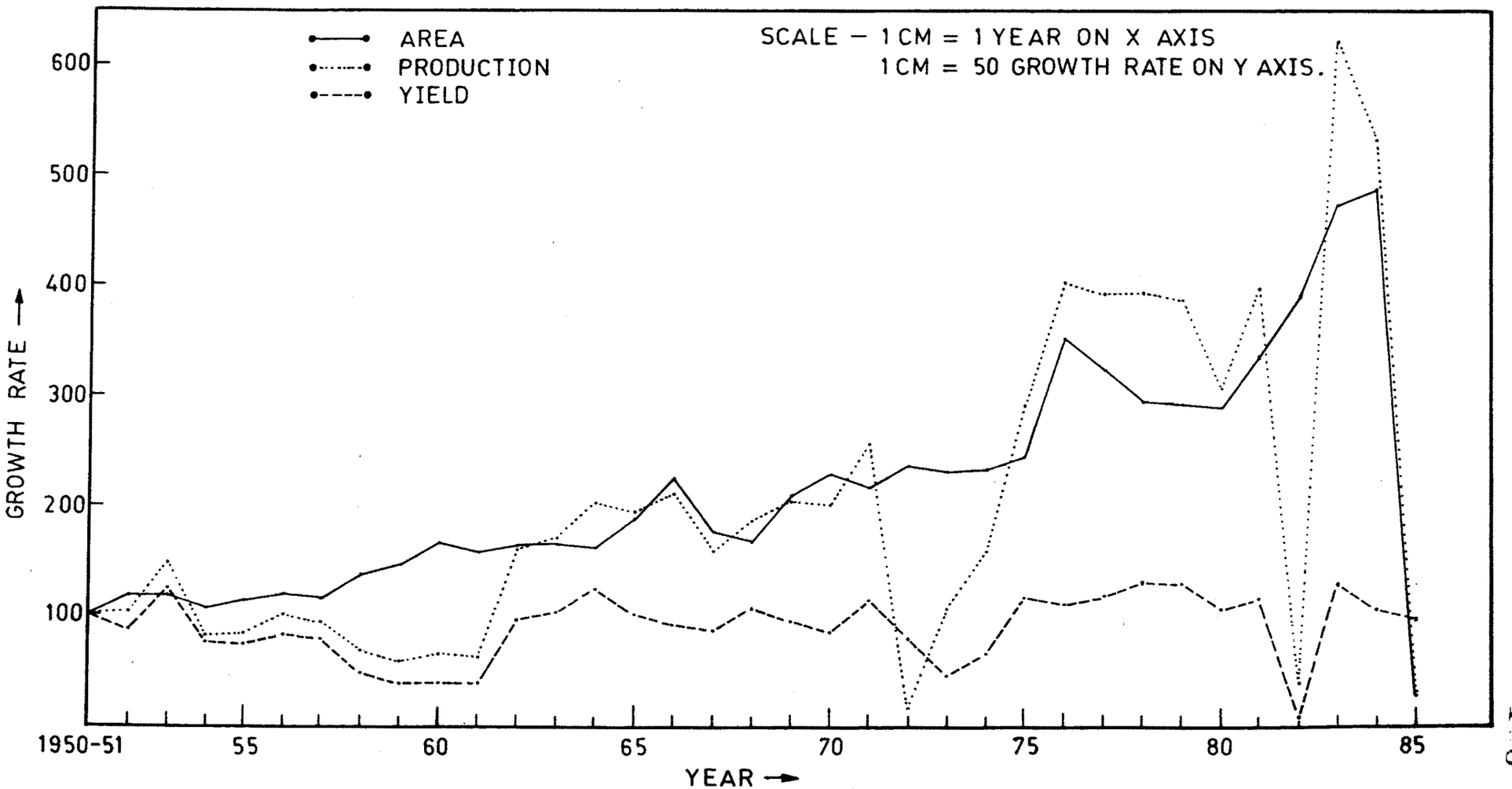

FIG.5·2-GRAPH SHOWING THE VARIATIONS OF AREA PRODUCTION AND YIELD OF SUGARCANE IN SOLAPUR DISTRICT.

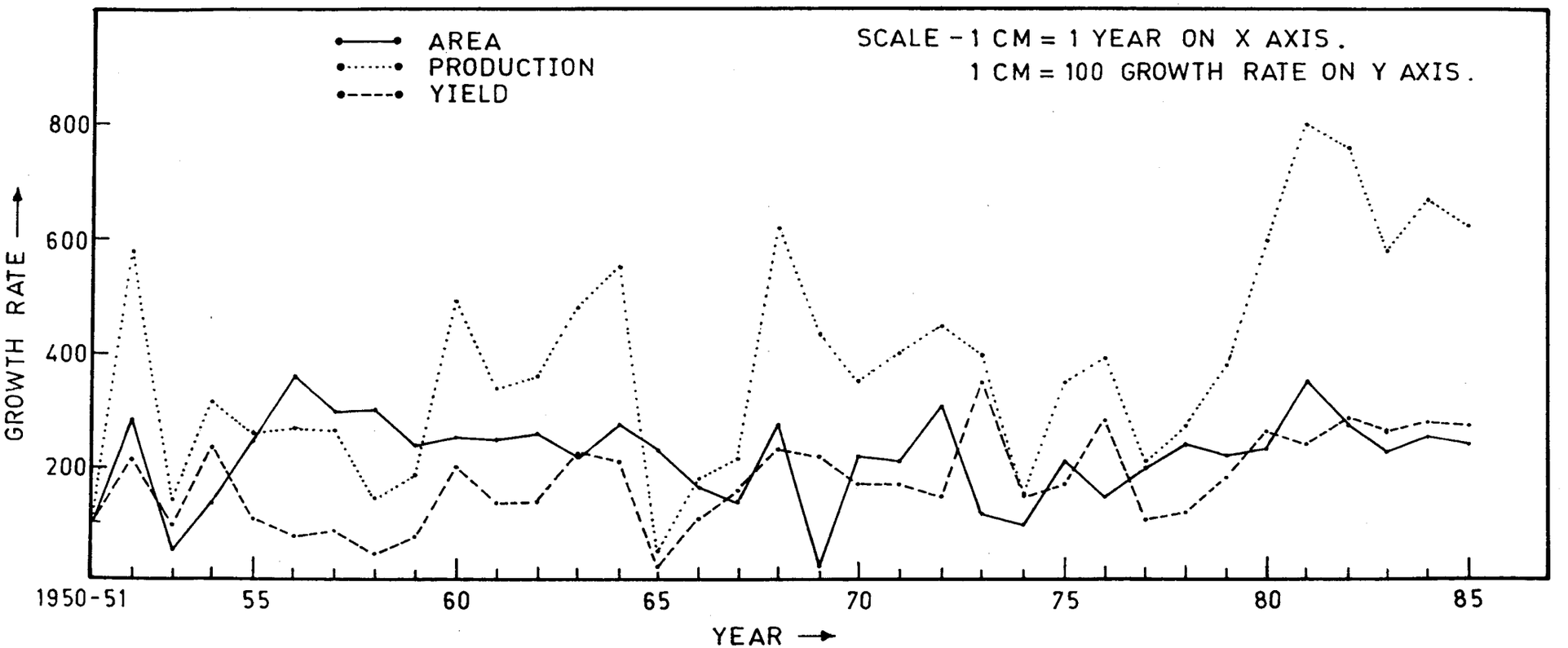

FIG.5·3-GRAPH SHOWING THE VARIATIONS OF AREA, PRODUCTION AND YIELD OF COTTON IN SOLAPUR DISTRICT.