
CHAPTER - FOUR



CHAPTER IV.

GROWTH RATES OF MAJOR CEREALS IN SOLAPUR DISTRICT :

The major cereals grown in the district are jawar(K+R) of which Rabbi jawar is cultivated on a large scale, bajara, wheat and to some extent rice also. Over the longer period of 35 years, changes in their relative area, production and productivity have occurred. In the meanwhile in respect of certain cereals technological changes have occurred and therefore the whole period is being split up in two sub periods. One 1950-51 to 1965-66, which is designated as the Pre High Yielding Varieties period .(Pre-HYVs period) and two, 1966-67 to 1984-85, which could be designated as Post High Yielding Varieties period.(Post- HYVs period). We have made an attempt to analyse the changes in respect of above mentioned variables over the each sub period and over the longer whole period.

4.1 AREA , PRODUCTION AND PRODUCTIVITY OF JAWAR.

The cultivation of jawar in the district is the still major activity of the vast majority of the farmers in the district. Though our analysis applies to both Kharif and Rabbi jawar , the cultivation of Rabbi jawar dominates the overall agricultural activities in the district. Of the gross cropped area(GCA) 1135316 hectares (average of 1950-53) the area occupied by the jawar amounted to 750903 hectares (average of 1950-53) , the relative percentage share of which in the beginning of the period came 66.14 percent in the

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GCA and by the end of the period the GCA increased to 1216400 hectares (average of 1982-85), whereas the hectorage of the jawar decreased to 696416 (average of 1982-85) hectares resulting in the fall in its relative percentage share to 57.25 percent in the GCA. During pre HYVs period the area under jawar did not increase very significantly. The annual compound growth rate of increase in the area under jawar during this period worked out to be just 0.6 percent p.a. which could be regarded as a marginal rate of increase. As against the positive increase in the area, the yield growth rate of the crop worked out to be negative i.e. -7.30 percent p.a. during the same period. The declining growth rate of productivity caused the production growth rate to be negative i.e. -6.88 percent p.a. so during this first short period the productivity of the crop did not improve. In point of fact a rather substantial decline in productivity took place during the period under reference. In the subsequent period the changes in the area under the crop did not occur because the area growth rate works out to be just 0.06 p.a. compound. As against this the productivity and production growth rates turn out into passive growth rates viz. 1.02 percent and 1.09 percent p.a. respectively. The productivity and production growth rates are more or less similar and hence the increase in the production was the sole result of increased in the productivity permitting the area under the crop to remain more or less stagnant over this period. The improvement of productivity and also production over the preceding period could be attributed to the

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introduction of HYVs of seeds and application of chemical fertilizers and the gradual diversion of the area under traditional varieties of the crops to the new varieties along with the application of the chemical fertilizers over a considerably longer period from 1950 to 1985. The rates of increase in area under production, productivity of the crop -0.52 , 1.40 , and 2.22 respectively indicate that the productivity has been rising by 2.22 percent offsetting more than the loss caused in the production by decline in area and pushing the growth rates of production to 1.40 percent p.a. compound. The increasing rate of productivity occurred due to adoption of the new varieties of seeds especially of 35-1, 9R and 86 R. These are for Rabbi season and CSH₁ , CSH₅ , CSH₉ for Kharif season which are more suited for dryland farming and especially to the area of Solapur district. The most popular traditional variety i.e. Maldandi Shalu has been replaced by these varieties which at present have become more popular with the farmers. With the adoption of these varieties the farmers have already shifted to a new technology of cultivation in respect of the crop in question. Though the department of agriculture has classified it as a food crop , the same crop will be considered as commercial crop from the viewpoint of the cultivators of jawar in the dry farming areas. So in the development process and the consequent increase in the demand for food crop such as jawar the commercialisation of its production has occurred in the district. The production growth was mainly due to the improvement in the productivity which in turn resulted from the adoption of scientific seeds and methods of cultivation

by the dry land farmers.

4.2 AREA , PRODUCTIVITY AND PRODUCTION OF BAJARA .

Another important cereal crop grown in the drought prone area especially in Solapur district is bajara. The cultivation of bajara however is being concentrated in specific area of the district covering the taluks of Mangalwedha , Sangola , Akkalkot , Karmala and to some extent Pandharpur and Madha. Its relative share in the gross cropped area was just 7 percent (1950-53 average) which declined to 3.34 percent (1982-85 average). During the first period both the area and productivity of crop decreased at the rate of -0.30 percent and -9.59 percent p.a.compound. and both of them pushed up the rate of decrease in the production to -10.38 percent .p.a.

During the first short period the decreasing trend of the production could be attributed to a rapid fall in the productivity of crop. During the first period violent fluctuations in the productivity did occur due to the vagaries of monsoon and also greater degree of incidence of diseases on the crop. The most important explanation for the year to fluctuations in the productivity could be sought in the fact that the cultivation of bajara is undertaken by the farmers mostly on the third grade land (murum) which have a very less moisture retaining capacity. Since the drought prone areas are subject to uncertainty of rainfall and uneven distribution over space and time , the crops such as bajara are being

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subjected to fluctuations in their respective yields and consequent outputs. The dryland farmers and especially the cultivators of bajara for some time have to suffer the losses in the output of the crop to such an extent even that they are not able to get themselves compensated the seeds they sow, apart from their labour both of men and material and animal and to some extent capital in the form of manures. This is borne by not only the farmers' experience but by our indicators of yield indices constructed for the period.

In the subsequent next period (1966 and onwards) exactly opposites have happened in respect of all the variables. The area under the crop decreased at the rate of -6.00 percent which almost remained stationary during the preceding period. The productivity on the contrary increased at the rate of 5.01 percent which could not be considered as significant. Though productivity trend was substantially positive it could not however compensate the decrease in the production at the rate of -1.30 percent caused by the loss in the area under the crop. The improvement in the productivity of crop during this period was mainly because of introduction of HYVs of bajara. The improved varieties of bajara are no doubt superior to the traditional varieties in respect of productivity but seem to be subject to high degree of susceptibility to various diseases known as 'Gosavi' and 'Chikata'. The opposite trend in respect of area seem to be contrary to the expectation of some. The improved productivity of bajara did not however induce the farmer to extend area under bajara. In point of

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fact the decrease in the area of bajara was due to the introduction of new commercial oil seed crop.i.e.'sunflower' which has become atleast under the present circumstances,a substitute crop to bajara. With the introduction of the new varieties of bajara , its cultivation has become more riskier which the small and marginal farmers are rather unwilling to face the risk , and hence we find a declining area trend rather prominent one in the Post HYVs period. The long term growth rates however point out that the productivity and production growth rates are higher than those of jawar,which is a major ~~ce~~ereal crop of the district.The long term growth rates of these three namely - area, productivity and production worked out to be -2.38 percent , 5.80 percent ,and 3.38 percent respectively. By comparing these two sets of long term growth rates in respect of jawar and bajara one may conclude that introduction of HYVs have become more successful than jawar.

4.3 AREA , PRODUCTION AND PRODUCTIVITY OF WHEAT .

Cultivation of wheat was not in vogue in the 1950 s and early 1960 's in the district . Wheat being a Rabbi crop it was mainly cultivated on the fields with well irrigation. In the beginning of the period its relative share in the total cultivated area i.e. GCA was just 1.85 percent (1950-53 average) It however increased to 4.06 percent by the end of the period under the study (1982-85 average). Strangely enough during the first period (Pre-HYVs) the rates of decrease in both productivity and production more or less coincided and

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the area almost remained stagnant over the period . Rather a substantial decrease in both productivity and production took place at -10.60 and 10.65 percent p.a. compound respectively. The factors that could be held responsible for their decreasing rates are more or less similar to those which are described with regard to bajara. (Please see 4.3). During the subsequent period all the three variables showed positive growth rates .

The area under the crop grew at the rate of 4.8 percent , the productivity grew at the rate of 3.79 percent both of which jointly pushed the growth rate of production to 8.86 percent p.a. The high rate of growth of output achieved during the HYVs period could be adduced as an evidence to the successful introduction of new varieties¹ and they being established in the district and also the increasing preference of the farmers to extend the area under its cultivation with assured irrigation.

Over a longer period of time the area, productivity and production have revealed increasing trends, the actuals of which worked out to be 3.27 , 4.10 , and 7.49 p.a. compound correspondingly . Of course one can seek the explanation of increasing trend over the longer period of time , in the fact that the test of the consumer have changed in favour of wheat , superior to other cereals and its commercialisation i.e. increasing demand for it with the growing urbanisation.

1 - The most familiar HYVs of wheat are Kalyansona and 2189.

As compared to the efficiency of farmers in respect of jawar and bajara, the efficiency of the farmers in respect of wheat seems to be much more satisfactory. We therefore conclude at this stage the cultivators of the wheat have acquired the knowledge of managing the new varieties with a view to increasing the output. This became possible for them because in our opinion, farmers allot very manageable area to the cultivation of the crop, after taking into account the other constraints such as irrigation and other necessary inputs like chemical fertilizers, which more generally not being done in respect of other cereal crops, especially jawar even grown on a vast scale in the district and without assured irrigation.

4.4 AREA, PRODUCTION AND PRODUCTIVITY OF RICE.

While passing we refer to rice which is not a major cereal of the district judged by any standard either its area or production. In the beginning of the period its share in the GCA was less than 1 percent i.e. (0.8 percent 1950-53 average). Looking to the relative share one cannot even think of its cultivation in the drought prone areas, as it requires relatively greater supply of water as compared to other crops. Rice is cultivated mainly in the Kharif season and generally as a catch crop after the harvest of which the same land is being used for the cultivation of other crops mainly pulse crop, Gram and cereal wheat. During the first period the area increased while productivity decreased but

9 less than area and therefore production increased. The growth rates correspondingly are 5.00 , -2.00 and 3.00 . During the next period the rate of increase in its productivity, (8.25 percent p.a.) whereas rate of increase in the area was minus. (-2.23 percent p.a.) The former being larger than the latter, the production increased at the rate of 5.83 percent p.a. Over a longer period of time the area is on the decline by -2.99 percent , the productivity is on the increase at the ~~2.4~~5.70 percent by offsetting more than the area decrease and pushing the growth rate to 2.55percent. The positive growth rates of productivity and production over long period could be analysed by referring to the factors referred to in connection with the improvement in productivity and production. Despite of the impressive improvement in productivity and production the area under it cannot be extended owing to the constraints imposed by the definition of the drought prone area by itself.

4.5 AREA , PRODUCTION AND PRODUCTIVITY OF TOTAL CEREALS .

Though formerly cultivation of minor millets in vogue in the district but they are in the process being gradually dropped out by the farmers. Again there has been a trend to divert the land from the cultivation of cereals to the cultivation of the other nonfood crops which are purely commercial crops. The statement could be substantiated by looking at changes in the relative shares of the area occupied by cereals at two different points of time. One at

the beginning 1950-53 average and another at the end of the period 1982-85 average. The relative percentage^s share in the GCA changed from 76.66 in the beginning to 63.61 percent at the end of the period. During the Pre-HYVs period the area under all cereals grew by 1 percent p.a.compound. Likewise the composite productivity and production grew by 6.00 and 7.00 percent p.a.compound respectively. During the Post-HYVs period the area decreased at the rate of -0.66 percent, which is slightly less than the rate of increase that took place in the preceding period. The other two variables productivity and production increased by 1.84 and 1.16 percent p.a.compound. The lower growth rates of productivity and production of total cereals seem to be perplexing, for the certain cereals like wheat and rice and even jawar have recorded rather higher growth rates. According to our view the lower growth rates especially in productivity and production when clubbed together could be ascribed to the fact that among the cereals the jawar is being cultivated on a very large scale and as such its productivity has been affected severely by vagaries of the monsoon. Despite the positive growth rate over a considerably long period of time the violent year to year fluctuations in respect of productivity and production did occur; causing a very high degree of instability in both of them. If one looks at the indices of productivity and production of cereals (Table No.4.5) one can easily realise the degree of instability in the form of ups and downs caused by the irregularity of the monsoon. The long term growth rates of

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all the cereals in respect ^{of} four variables they are quite closer to the growth rates of the variables of jawar. The area decreased by -6.55 ,productivity increased by 2.52 and production increased by 1.75 percent p.a.compound, which seem to have behaved like those of jawar the major staple food crops of the district. The long term positive growth rates in respect productivity and production some individual cereals could be taken as indicators of the dryland 'farmers' entrepreneurial ability to achieve increases in the agricultural production vis-a-vis the overall adverse climatic conditions including monsoon precipitation.

4.6 AREA , PRODUCTION AND PRODUCTIVITY OF TUR .

Along with the cereals some pulses such as tur (arhar), gram, (udid) , green gram(moong) are also cultivated. When the decision as regards allocation of lands as between the various crops are taken the farmers give some preference to pulse crops also. The pulse crops are being cultivated not for sale but mostly for domestic consumption. Among these various pulses tur is the most suited crop and comparatively cultivated on a larger scale in the district. The area under all the pulses formed 7.18 percent of the GCA in the beginning . The area went on increasing and percentage share changed to 9.54 percent by the end of the period. In the following para we analyse the changes in area , productivity and production of tur in the district over the period under study. Since the remaining pulse crops are not

being considered as very important crops in the over all cropping pattern, of the district, we do not make an attempt to analyse all of them.

In the beginning of the period the area occupied by tur formed just 2.42 percent to the gross cropped area (1950-53 average to GCA) which remained almost constant or slightly changed to 2.78 percent (1982-85 average). During first period all the three - area, productivity and production of the crop registered positive growth rates viz. 3.00, 2.00 and 5.00 percent p.a. compound, correspondingly. During this period the relative contribution of the area to the production growth was larger than that of the productivity. During the following sub period the area growth rate pushed to 9.74 percent p.a. compound. As against this the productivity growth rate registered 5.45 percent p.a. which was the result of the area growth which in turn offset more than the loss caused by decline in the productivity. Even though this period refers the period of Green Revolution, the HYVs of tur have not been introduced in the district. Farmers therefore continued with the local traditional varieties of tur and most traditional methods of its cultivation. The high rate of area growth under tur during the latter part of whole period was the result of intra-group of crops substitution. Since the latter 1960s the South West monsoon has become more erratic and also scanty in the beginning of Kharif season. The other Kharif pulse crops like black gram, green gram, matki, chavali have been dropped out from

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cropping pattern by almost all the individual farmers, as they are least resistant to the dry spell weather, especially during the beginning of Kharif season. As against these crops tur has more capacity to sustain during dry weather spell after it being sprotted. Even if the spell of dry weather continues condiderably for a longer period of time the growth of the crop continues which is not true in respect of other pulse crops. Therefore , the area expansion took place at the cost of other Kharif pulse crops. In recent years HYVs of tur have been introduced but they seem to have made no dent on its productivit y . Therefore , the second period has the declining growth rate of productivity and further the local varieties also did not show any improvement in the productivity, because of the dry spell that occur very frequently at the time of seed setting period. Similarly the damages to the crop at sometime have been caused by insects are not infrequent. Besides these two the most important factor from our viewpoint is that the most of the medium, semi medium, small and marginal farmers do not use insecticides mainly because of the high prices of liquid insecticides , (currently one litre liquid insecticide costs Rs 85/-) which are beyond the reach of the farmers belonging to these categories and also to some extent the spray pumps are not easily available in rural areas. Very recently the economic incentives in the form of giving subsidies to the farmers for purchasing spray pumps and insecticides have been started by Solapur Zilla Parishad which are being implemented by its subsidiaries at taluk level. (Taluk

Panchayat Samiti) In this respect the experience is not so satisfactory because these economic incentives in the form of subsidies do not go to the farmers to whom they are meant, instead the farmers having large holding and perennial irrigation sources have recently shifted to the cultivation of grapes and other horticulture which require the frequent use of insecticides on a large scale, manipulate to appropriate all the advantages of economic incentives under the names of the medium to marginal farmers surreptitiously. We therefore conclude that, even though the expansion of hectarage took place, the productivity instead of improvement declined; mainly because of the unauthorised diversion of the inputs to the cultivation of grapes and other horticulture, which have emerged as major commercial crops in the recent past.

The long term growth rates of productivity and production reveal a disappointing picture. The productivity declined at the rate of 4.2 percent p.a. compound and the production remained stagnant .(production growth being just 0.32 percent p.a.) The only area growth rate worked out to be positive ,4.72 percent p.a. making good the entire loss in the production caused by the decreasing rate of productivity. The area growth rate being slightly higher than that of productivity and production ,either remained stagnant or marginally increased. The declining long term growth rate of productivity could be attributed to the various factors described in respect of the falling productivity growth rate

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that occurred during the second short period ,we need not repeat them here.

4.7 AREA , PRODUCTION AND PRODUCTIVITY OF TOTAL PULSES .

As we have mentioned earlier ,different Kharif and Rabbi pulse crops were in vogue in the district. Among the Rabbi pulse crop gram still occupies relatively considerable area during the Rabbi season. In order of importance gram comes next to tur. Taking pulses all together the area under them during the first sub period expanded at the rate of 2.0 percent p.a. whereas productivity and production decreased by -12.00 and -10.00 percent p.a. compound . Looking at these ~~two~~ growth rates one can realise that the production and productivity of all the pulses taken together fell off at faster rates. During the second period no progress has occurred in respect of all three variables . Area remained almost stagnant (its growth rate being -0.01 percent) whereas the other two production and productivity registered annual growth rate of 1.00 percent compound each during the same period. Despite these dissimilar growth rates over the two sub periods their long term growth rates worked out to be 1.35 ,1.23 and 2.58 percent p.a.compound correspondingly. Looking at the long term growth rates and especially of production we may conclude that the production growth rate resulting from both area expansion and productivity appreciation could be considered as a satisfactory growth despite all the

climatic constraints.

4.8 AREA , PRODUCTION AND PRODUCTIVITY OF TOTAL FOOD GRAINS.

The total area under food grains(cereals and pulses) did not increase over the long period of time under reference. During the first short period area did increase marginally by 0.81 percent whereas it was followed by the decrease at the rate of -0.60 percent during the subsequent period. The productivity of all the foodgrains worked out to be 5.77 percent p.a.compound which could not sustain in the subsequent period. The tapering off of the productivity growth rate occurred and the productivity of all the food grains increased at 1.84 percent p.a. The long term growth rate of the productivity worked out to be 2.32 percent p.a. During the pre-HYVs period the output of all food grains increased at the rate of 7.00 percent p.a. compound which tapered off during the subsequent period and over the long period too growth rate being 1.16 and 1.75 percent respectively. During the next sub period i.e. Post HYVs period the output of all food grains increased by just 1.75 percent despite seed fertilizer revolution popularly known as Green Revolution.

Lastly we make an observation regarding the foodgrains production growth rate over the long period that in Solapur district jawar is cultivated on a very large scale, but the new HYVs of jawar did help increase in

17 productivity as HYVs of bajara and wheat and also rice have done. The substantial increases in the productivity of latter crops did not contribute much to pushing the food grains output growth because these crops are cultivated on a very minor scale. Though the crops have registered impressive growth rates of productivity and production their contributions to overall food grains production have been very marginal , hence a lower growth rate of productivity and the production of aggregate foodgrain crops.

TABLE NO. 4.1

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

PERIOD : 1950-51 to 1984-85 .

Sr.No.	CROPS	PERIOD	AREA	PRODUCTIVITY	PRODUCTION
1	Jawar	1	0.6	-7.30	-6.88
		2	-0.06	1.02	1.09
		3	-0.52	2.22	1.40
2	Bajara	1	-0.30	-9.59	-10.38
		2	-6.00	5.01	-1.30
		3	-2.38	-5.80	-3.38
3	Wheat	1	0.5	-10.60	-10.65
		2	4.88	3.79	8.86
		3	3.27	4.10	7.49
4	Rice	1	5.00	-2.00	3.00
		2	-2.23	8.25	5.83
		3	-2.89	5.70	2.55
5	Total Cereals	1	0.90	6.00	7.00
		2	-0.66	1.84	1.16
		3	-0.55	2.32	1.75
6	Tur	1	3.00	2.00	5.00
		2	9.74	-3.91	5.45
		3	4.72	-4.20	0.32
7	Total Pulses	1	2.00	-12.00	-10.00
		2	-0.01	0.98	0.96
		3	1.35	1.23	2.58
8	Total Foodgrains	1	0.90	6.00	7.00
		2	-0.60	1.73	1.11
		3	-0.30	2.03	1.71

TABLE NO. 4.2
 Cropping patteren of principal crops in Solapur District.
 PERIOD : 1950-51 to 1984-85 .

Sr.No.	CROP	% to Gross Cropped' Area Average of	
		1950-53	1982-85
1	Jawar	66.14	57.25
2	Bajara	7.10	3.34
3	Wheat	1.85	4.06
4	Rice	0.80	0.32
5	Total Cereals	76.66	63.61
6	Tur	2.42	2.78
7	Total Pulses	7.18	9.54
8	Total Foodgrain	83.84	73.15
9	Groundnut	4.90	2.07
10	Sugarcane	0.61	8.22
11	Cotton	0.76	0.96

TABLE 12. 4.1

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

(Area in Hectares, Production in Metric Tonnes, Yield in Mg./Ha.) Period 1950-51 to 1984-85.

YEAR	AREA	PRODUCTION	YIELD	YEAR	AREA	PRODUCTION	YIELD
1950-51	742388 (100%)	107300 (100%)	145 (100%)	1968-69	797718 (107.45)	288900 (269.25)	362 (250.51)
1951-52	736396 (99.19)	115000 (107.18)	15610 (107.59)	1969-70	628002 (84.59)	272100 (253.59)	433 (299.65)
1952-53	773927 (104.25)	92300 (86.02)	119 (82.06)	1970-71	611836 (82.41)	139000 (130.00)	228 (157.72)
1953-54	749554 (100.97)	203800 (189.93)	272 (187.59)	1971-72	691069 (93.09)	175700 (163.75)	254 (175.17)
1954-55	727004 (97.93)	363200 (337.49)	499 (344.14)	1972-73	149266 (60.52)	30900 (28.80)	68 (46.89)
1955-56	728137 (98.07)	201100 (187.42)	276 (190.3)	1973-74	592488 (79.81)	32300 (30.10)	545 (375.86)
1956-57	727570 (98.00)	282150 (261.95)	387 (268.75)	1974-75	590163 (79.50)	323300 (301.30)	547 (377.24)
1957-58	736113 (99.15)	131497 (122.55)	178 (122.76)	1975-76	682533 (91.94)	204400 (190.49)	299 (206.20)
1958-59	777570 (104.74)	140202 (130.66)	180 (124.13)	1976-77	633667 (84.44)	309900 (288.82)	446 (307.59)
1959-60	720283 (97.02)	262600 (244.73)	365 (251.72)	1977-78	579444 (78.12)	212900 (198.62)	313 (215.86)
1960-61	811075 (109.25)	360252 (335.74)	444 (306.62)	1978-79	523182 (70.47)	360600 (336.07)	689 (475.17)
1961-62	791376 (106.60)	292018 (272.15)	369 (254.48)	1979-80	755052 (101.71)	234400 (265.05)	376 (259.31)
1962-63	805295 (108.47)	3112 (2.92)	4 (2.76)	1980-81	748213 (100.78)	281400 (262.26)	376 (239.31)
1963-64	813791 (109.62)	3725 (3.47)	5 (3.45)	1981-82	751351 (101.22)	257200 (233.18)	333 (299.66)
1964-65	775574 (104.47)	335906 (313.05)	433 (298.52)	1982-83	803191 (108.19)	151000 (140.73)	188 (129.66)
1965-66	799880 (107.74)	196800 (183.41)	246 (169.66)	1983-84	755742 (101.80)	269800 (251.44)	357 (246.21)
1966-67	773239 (104.16)	336702 (313.79)	435 (300.00)	1984-85	530317 (71.43)	216900 (202.14)	409 (287.07)
1967-68	788162 (106.17)	320600 (298.79)	407 (280.68)				

SOURCES: - 1) 1950-60 - Sacra and Crop Report of Old Bombay State.

2) 1960-85 District Statistical Office, Solapur.

TABLE NO. 4.4

Index Number of Area, Production, and Yield of Bajara in Soalapur District.

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

PERIOD - 1950-85.

YEAR	AREA	PRODUCTION	YIELD	YEAR	AREA	PRODUCTION	YIELD
1950-51	62874 (100%)	9900 (100%)	157 (100%)	1968-69	120500 (216.96)	28300 (285.95)	235 (149.68)
1951-52	100850 (166.40)	8000 (83.83)	82 (52.22)	1969-70	132949 (211.45)	22000 (222.22)	166 (105.73)
1952-53	78259 (124.47)	1800 (18.18)	23 (14.64)	1970-71	97038 (154.37)	28900 (270.70)	276 (175.79)
1953-54	109218 (172.12)	10400 (105.05)	96 (61.14)	1971-72	88174 (140.23)	19200 (193.93)	218 (138.21)
1954-55	115141 (183.33)	10400 (105.05)	90 (57.32)	1972-73	31317 (49.81)	700 (7.07)	22 (14.01)
1955-56	107282 (170.63)	8000 (80.90)	75 (47.13)	1973-74	86344 (138.12)	20100 (203.03)	231 (147.13)
1956-57	111211 (176.99)	9200 (92.92)	83 (52.86)	1974-75	75003 (119.29)	9800 (98.98)	131 (82.90)
1957-58	96630 (153.75)	3076 (31.07)	32 (19.75)	1975-76	72697 (115.60)	11400 (115.15)	157 (99.36)
1958-59	86194 (137.09)	3967 (40.07)	46 (29.29)	1976-77	72226 (114.37)	11100 (112.12)	153 (97.45)
1959-60	99473 (158.22)	9500 (95.95)	95 (60.50)	1977-78	73335 (115.64)	9100 (91.91)	124 (78.98)
1960-61	97463 (155.01)	11557 (116.73)	119 (75.15)	1978-79	42552 (67.67)	12770 (128.28)	299 (189.90)
1961-62	85431 (135.97)	3759 (37.96)	44 (28.02)	1979-80	72601 (115.47)	18700 (187.87)	256 (163.05)
1962-63	88935 (141.14)	102 (1.03)	1.5 (0.164)	1980-81	47385 (76.31)	13100 (132.32)	273 (173.88)
1963-64	96554 (153.56)	127 (1.13)	1.5 (0.164)	1981-82	52162 (82.96)	20500 (207.07)	393 (250.32)
1964-65	93158 (148.16)	6706 (67.73)	72 (45.85)	1982-83	33561 (53.37)	4900 (49.49)	146 (92.99)
1965-66	69328 (110.26)	12900 (130.80)	186 (118.47)	1983-84	62466 (99.35)	23300 (235.35)	373 (237.58)
1966-67	108593 (172.72)	11481 (115.96)	106 (67.51)	1984-85	25714 (40.99)	7200 (72.73)	280 (178.34)
1967-68	103347 (164.37)	111008 (112.12)	107 (68.15)				

SOURCE: - As in Table No. 4.3.

TABLE NO. 2.5

Index Number of Area, Production and Yield of Wheat in Solapur District.
(Area in Hectares, Production in Metric Tonnes, Yield in Kg./Ha.)

PERIOD - 1950-85

YEAR	AREA	PRODUCTION	YIELD	YEAR	AREA	PRODUCTION	YIELD
1950-51	22834 (100%)	15300 (100%)	670 (170%)	1968-69	26253 (114.97)	15400 (100.65)	586 (87.46)
1951-52	22105 (96.90)	7000 (45.75)	316 (47.16)	1969-70	26607 (116.32)	15500 (101.30)	582 (86.96)
1952-53	18854 (78.19)	8300 (54.24)	465 (69.25)	1970-71	29036 (127.16)	20600 (134.64)	709 (105.92)
1953-54	19392 (94.92)	9300 (60.78)	480 (71.64)	1971-72	39678 (171.13)	27300 (179.03)	701 (104.62)
1954-55	19311 (84.57)	13600 (84.96)	673 (100.44)	1972-73	20950 (91.74)	12700 (83.00)	606 (90.44)
1955-56	21295 (93.26)	8500 (55.55)	399 (59.55)	1973-74	35040 (153.48)	27200 (177.77)	776 (115.82)
1956-57	20303 (88.91)	10750 (70.26)	529 (78.95)	1974-75	41216 (180.50)	45700 (296.69)	1109 (155.52)
1957-58	23562 (103.38)	5060 (33.07)	215 (31.94)	1975-76	22899 (275.46)	51900 (339.21)	825 (123.13)
1958-59	24574 (107.62)	5344 (34.92)	217 (32.38)	1976-77	50519 (221.24)	33900 (221.56)	671 (100.14)
1959-60	20890 (91.92)	9300 (60.78)	445 (66.41)	1977-78	41823 (183.14)	38500 (251.63)	900 (137.31)
1960-61	22210 (97.25)	10215 (66.76)	460 (68.65)	1978-79	30559 (133.83)	44000 (287.58)	1439 (214.77)
1961-62	21550 (94.37)	13412 (87.66)	622 (98.80)	1979-80	53634 (235.85)	48900 (319.60)	908 (135.52)
1962-63	21325 (93.39)	13500 (88.88)	630 (93.89)	1980-81	51742 (226.60)	35900 (234.64)	693 (103.43)
1963-64	22616 (99.04)	13600 (88.88)	600 (88.50)	1981-82	50976 (223.24)	49500 (324.18)	973 (145.22)
1964-65	22023 (96.44)	12386 (81.01)	563 (88.50)	1982-83	45992 (201.41)	35000 (228.75)	761 (135.58)
1965-66	22006 (96.37)	17300 (93.46)	649 (96.86)	1983-84	54001 (236.49)	64100 (419.95)	1187 (177.16)
1966-67	22475 (98.42)	7518 (49.15)	335 (50.00)	1984-85	48175 (210.97)	39600 (258.92)	822 (122.68)
1967-68	23650 (103.57)	15200 (99.34)	643 (95.97)				

SOURCE - As in Table No. 4.3.

TABLE No. 4.6

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

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

PERIOD 1-1950-85

YEAR	AREA	PRODUCTION	YIELD	YEAR	AREA	PRODUCTION	YIELD
1950-51	7044 (100%)	4600 (100%)	653 (100%)	1968-69	7020 (99.65)	5900 (128.26)	840 (128.63)
1951-52	10485 (148.95)	5700 (123.91)	544 (83.15)	1969-70	7371 (104.64)	4900 (106.52)	665 (101.93)
1952-53	6558 (93.10)	3000 (65.21)	457 (69.98)	1970-71	6359 (90.27)	5300 (115.21)	833 (127.56)
1953-54	8825 (125.28)	2300 (50.00)	261 (39.92)	1971-72	4103 (58.24)	3300 (71.73)	804 (123.27)
1954-55	8299 (117.81)	4000 (86.95)	482 (73.66)	1972-73	1227 (17.41)	500 (10.86)	401 (62.32)
1955-56	7246 (102.86)	3800 (82.60)	524 (80.24)	1973-74	6321 (89.73)	6400 (139.13)	1012 (154.97)
1956-57	7772 (110.33)	3900 (84.78)	502 (76.87)	1974-75	7925 (112.50)	6200 (134.78)	782 (119.75)
1957-58	8966 (125.86)	1376 (29.91)	155 (23.73)	1975-76	6585 (93.48)	14500 (315.21)	2202 (337.05)
1958-59	8582 (121.55)	2591 (56.32)	302 (46.09)	1976-77	7512 (107.21)	13800 (300.00)	1927 (279.78)
1959-60	51295 (728.20)	9700 (210.86)	189 (28.94)	1977-78	6592 (93.58)	16000 (347.82)	2427 (371.66)
1960-61	9859 (139.96)	4645 (100.97)	471 (72.12)	1978-79	5035 (71.47)	10500 (228.26)	2085 (319.29)
1961-62	8306 (117.92)	2128 (46.26)	256 (26.86)	1979-80	5187 (73.63)	6000 (130.43)	1157 (178.40)
1962-63	9982 (141.75)	6600 (143.47)	661 (101.22)	1980-81	5864 (83.24)	11000 (241.30)	1893 (289.73)
1963-64	10086 (143.18)	5000 (108.69)	496 (75.80)	1981-82	6502 (92.30)	7400 (160.86)	1138 (174.27)
1964-65	9349 (132.72)	5385 (117.06)	576 (88.05)	1982-83	3800 (53.94)	5800 (120.08)	1526 (233.99)
1965-66	10450 (148.35)	2400 (52.17)	230 (35.06)	1983-84	4200 (59.62)	6800 (147.82)	1619 (247.93)
1966-67	9500 (134.86)	3150 (68.47)	332 (50.84)	1984-85	3800 (53.94)	5500 (119.56)	1447 (221.59)
1967-68	7229 (102.62)	2800 (60.36)	387 (59.26)				

Source: As in Table No. 4.3.

TABLE NO. 4.7

Index Number of Area, Production and Yield of Tur in Solapur District.
(Area in Hectares, Production in Metric Tonnes, Yield in Kg./Ha.)

PERIOD: 1950-85.

YEAR	AREA	PRODUCTION	YIELD	YEAR	AREA	PRODUCTION	YIELD
1950-51	18663 (100%)	8200 (100%)	439 (100%)	1968-69	67587 (362.14)	23300 (284.15)	345 (78.59)
1951-52	32712 (175.27)	11300 (137.92)	364 (83.03)	1969-70	53926 (288.95)	12000 (146.34)	223 (50.80)
1952-53	31093 (166.60)	11000 (134.14)	354 (80.63)	1970-71	74604 (399.74)	12600 (167.56)	169 (38.50)
1953-54	40607 (217.58)	15100 (183.12)	396 (90.21)	1971-72	33372 (178.81)	1200 (14.63)	36 (8.20)
1954-55	41336 (221.49)	18500 (225.61)	448 (101.82)	1972-73	6053 (32.43)	800 (9.76)	132 (30.06)
1955-56	37246 (199.57)	15000 (182.92)	403 (91.79)	1973-74	65220 (349.46)	18800 (229.27)	288 (65.60)
1956-57	39241 (210.26)	24400 (292.56)	622 (141.69)	1974-75	60319 (323.20)	6900 (84.15)	114 (25.97)
1957-58	33886 (181.56)	24400 (292.56)	720 (164.00)	1975-76	77193 (413.62)	10600 (129.27)	137 (31.21)
1958-59	32510 (174.19)	17200 (209.75)	529 (120.90)	1976-77	67318 (363.91)	9300 (113.41)	149 (33.94)
1959-60	39716 (212.80)	12300 (150.00)	310 (70.38)	1977-78	62738 (335.62)	14600 (178.04)	233 (53.08)
1960-61	36113 (193.50)	14750 (179.87)	408 (92.93)	1978-79	36947 (197.97)	21600 (263.41)	585 (133.26)
1961-62	42682 (228.69)	22963 (280.03)	538 (122.55)	1979-80	57499 (308.09)	11500 (140.24)	200 (45.55)
1962-63	35406 (189.71)	19400 (236.58)	548 (124.60)	1980-81	60317 (323.19)	11400 (139.02)	189 (43.05)
1963-64	39600 (212.18)	21300 (259.75)	538 (122.32)	1981-82	51127 (273.95)	13600 (165.85)	266 (60.59)
1964-65	42890 (229.81)	24995 (304.81)	583 (133.57)	1982-83	28116 (150.65)	9700 (118.29)	345 (78.59)
1965-66	47893 (256.62)	25806 (314.00)	539 (122.77)	1983-84	44827 (240.19)	20800 (253.66)	464 (105.69)
1966-67	51026 (27.41)	35966 (438.61)	705 (160.59)	1984-85	28421 (152.29)	10800 (131.71)	380 (86.56)
1967-68	65840 (352.78)	28100 (342.68)	427 (97.26)				

SOURCE: As in Table No. 4.3.

TABLE NO. 4.8

Index Number of Area, Production, and Yield of total Pulses in Selayar District.
(Area in Hectares, Production in Metric Tonnes, Yield in Kg./Ha.)

PERIOD : - 1950-85

YEAR	AREA	PRODUCTION	YIELD	YEAR	AREA	PRODUCTION	YIELD
1950-51	7591 (100%)	21200 (100%)	279 (100%)	1965-69	154841 (203.97)	45100 (212.73)	291 (104.30)
1951-52	89876 (118.13)	22800 (107.54)	254 (91.03)	1969-70	157593 (207.60)	32200 (151.88)	204 (73.11)
1952-53	79028 (104.10)	18500 (87.26)	2.4 (83.87)	1970-71	165411 (217.90)	30300 (142.92)	183 (65.59)
1953-54	110769 (145.92)	31200 (147.16)	282 (100.71)	1971-72	114046 (150.23)	18300 (86.32)	186 (66.66)
1954-55	113178 (155.68)	38800 (183.01)	328 (117.56)	1972-73	27865 (36.70)	3900 (18.39)	139 (49.82)
1955-56	107125 (141.12)	32300 (152.35)	302 (107.88)	1973-74	186529 (245.72)	43200 (203.33)	231 (82.79)
1956-57	112651 (148.40)	35550 (167.68)	316 (112.90)	1974-75	190107 (250.43)	36200 (170.75)	190 (68.10)
1957-58	106882 (140.80)	16901 (79.25)	157 (56.27)	1975-76	216700 (285.46)	50800 (239.62)	234 (83.87)
1958-59	100040 (131.78)	3157 (62.06)	132 (46.95)	1976-77	193549 (254.97)	36500 (172.16)	188 (67.39)
1959-60	109797 (144.64)	23700 (111.79)	216 (77.06)	1977-78	178735 (235.45)	40400 (190.56)	226 (81.00)
1960-61	104918 (138.21)	144.8 (68.05)	138 (49.10)	1978-79	102162 (134.58)	45400 (218.63)	454 (162.72)
1961-62	111324 (146.65)	38818 (183.10)	349 (125.08)	1979-80	164340 (216.49)	46743 (220.49)	284 (101.73)
1962-63	99303 (130.80)	342 (1.61)	3 (1.07)	1980-81	173090 (228.02)	42753 (201.66)	247 (80.53)
1963-64	103047 (135.74)	376 (1.58)	3 (1.07)	1981-82	132945 (175.13)	34300 (161.79)	258 (92.47)
1964-65	115825 (152.58)	43182 (203.68)	373 (133.69)	1982-83	90039 (118.61)	23500 (110.84)	261 (93.54)
1965-66	112438 (148.12)	47143 (227.37)	419 (150.00)	1983-84	145533 (191.71)	50500 (230.20)	347 (124.37)
1966-67	121461 (160.00)	51105 (241.06)	421 (150.8)	1984-85	112714 (148.48)	32800 (154.71)	291 (104.30)
1967-68	147862 (194.78)	45200 (213.20)	306 (109.67)				

SOURCE: - As in Table No. 4.3

TABLE No. 4.2

Index Number of Area, Production and Yield of total Cereals in Solapur District.
(Area in Hectares, Production in Metric Tonnes, Yield in Kg./Ha.)

PERIOD:- 1950-85.

YEAR	AREA	PRODUCTION	YIELD	YEAR	AREA	PRODUCTION	YIELD
1950-51	846357 (100%)	140900 (100%)	166 (100%)	1968-69	961126 (113.56)	347300 (246.56)	361 (217.46)
1951-52	891052 (104.09)	138900 (98.55)	158 (94.57)	1969-70	805800 (95.21)	324300 (230.32)	402 (242.16)
1952-53	833563 (104.39)	108000 (76.70)	122 (73.49)	1970-71	815256 (96.32)	197200 (140.05)	241 (145.18)
1953-54	894777 (105.72)	229800 (163.21)	257 (154.21)	1971-72	842097 (99.49)	223800 (158.94)	265 (157.63)
1954-55	877530 (103.68)	394100 (279.90)	450 (270.48)	1972-73	511104 (60.38)	54500 (38.70)	106 (53.95)
1955-56	870202 (102.17)	224300 (159.30)	258 (154.91)	1973-74	742260 (87.70)	389800 (276.94)	525 (316.26)
1956-57	873836 (103.25)	309200 (219.60)	354 (212.65)	1974-75	737445 (87.13)	398300 (287.98)	540 (325.30)
1957-58	872551 (103.09)	142632 (101.30)	163 (98.19)	1975-76	842554 (100.73)	319200 (226.70)	378 (277.71)
1958-59	905708 (107.01)	153401 (109.94)	169 (102.40)	1976-77	842894 (99.59)	400500 (284.44)	425 (256.02)
1959-60	853326 (101.47)	294500 (209.16)	343 (206.02)	1977-78	825242 (97.53)	298200 (211.78)	361 (217.46)
1960-61	892267 (104.24)	223954 (159.05)	254 (152.40)	1978-79	614910 (72.65)	451800 (320.98)	734 (442.16)
1961-62	866580 (102.38)	241471 (171.49)	279 (167.46)	1979-80	904258 (106.94)	367157 (260.76)	406 (244.57)
1962-63	954340 (112.75)	389358 (276.17)	407 (245.18)	1980-81	899232 (106.24)	359667 (255.44)	400 (240.96)
1963-64	973274 (114.99)	42164 (314.03)	454 (273.49)	1981-82	733335 (86.64)	320200 (227.41)	436 (262.65)
1964-65	933097 (110.24)	366489 (260.29)	393 (236.14)	1982-83	814880 (96.28)	197300 (140.12)	242 (145.78)
1965-66	1075332 (127.05)	481920 (342.27)	448 (269.87)	1983-84	745315 (88.06)	348600 (247.58)	467 (281.32)
1966-67	949413 (112.17)	368052 (261.42)	382 (230.12)	1984-85	760912 (89.90)	364700 (259.01)	479 (288.55)
1967-68	930815 (109.97)	354200 (251.56)	380 (228.91)				

SOURCE:- As in Table No. 4.3

TABLE NO. 4.10.

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

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

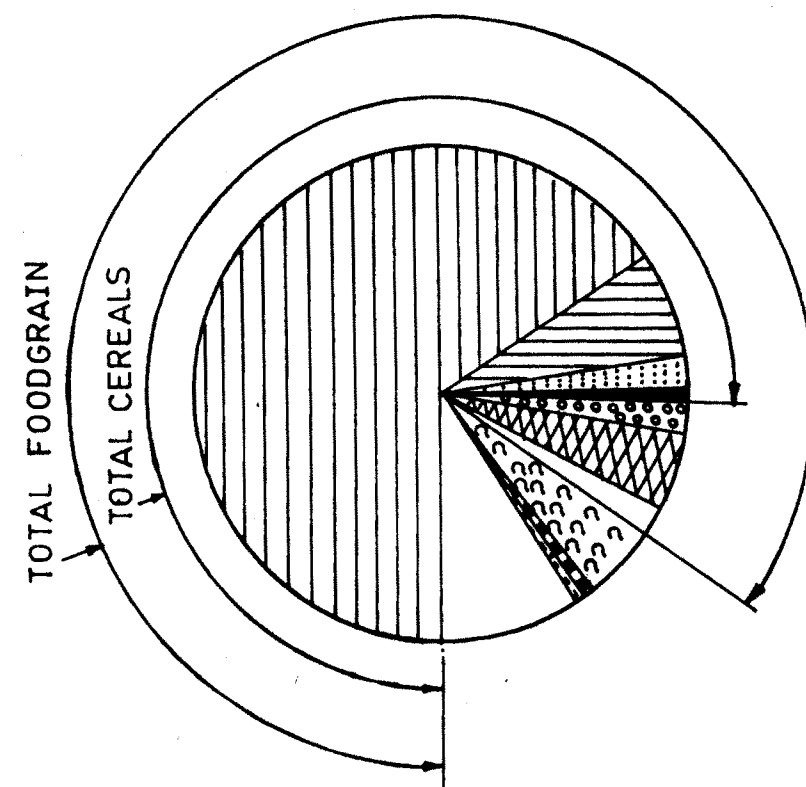
PERIOD 1-1950-85.

YEAR	AREA	PRODUCTION	YIELD	YEAR	AREA	PRODUCTION	YIELD
1950-51	922267 (100%)	162000 (100%)	176 (100%)	1968-69	1,15967 (121.00)	392400 (242.22)	351 (200.57)
1951-52	970728 (105.25)	161700 (98.81)	167 (94.85)	1969-70	963413 (104.46)	356500 (220.06)	370 (211.42)
1952-53	962591 (104.37)	126500 (78.08)	131 (74.85)	1970-71	980667 (106.33)	227500 (140.43)	231 (132.00)
1953-54	1005546 (109.03)	261000 (161.11)	260 (175.0)	1971-72	956143 (103.63)	247100 (149.44)	253 (144.57)
1954-55	995708 (107.96)	432900 (267.22)	435 (248.0)	1972-73	533969 (58.43)	58400 (36.04)	108 (61.71)
1955-56	977327 (105.97)	256600 (158.39)	263 (149.71)	1973-74	928739 (100.70)	433000 (267.28)	466 (266.23)
1956-57	986517 (106.96)	344750 (212.80)	349 (138.30)	1974-75	927552 (100.57)	434500 (268.20)	468 (267.42)
1957-58	979433 (106.19)	159433 (98.41)	163 (92.57)	1975-76	1062264 (115.17)	370000 (228.39)	348 (198.85)
1958-59	1005748 (109.05)	166558 (102.81)	166 (94.28)	1976-77	1036443 (112.37)	437000 (269.75)	421 (240.57)
1959-60	968623 (105.02)	318200 (196.41)	329 (187.42)	1977-78	1003977 (108.85)	338600 (209.01)	337 (192.57)
1960-61	987185 (107.03)	242379 (149.61)	246 (140.00)	1978-79	717072 (77.75)	498200 (307.53)	694 (396.57)
1961-62	1064982 (115.47)	280289 (173.01)	263 (150.28)	1979-80	1068598 (115.88)	413900 (255.49)	387 (221.34)
1962-63	1053643 (114.24)	309200 (240.24)	411 (210.35)	1980-81	1071329 (116.16)	402400 (248.29)	375 (214.28)
1963-64	1076321 (116.70)	442500 (273.14)	411 (234.85)	1981-82	866250 (93.92)	354500 (218.82)	400 (228.57)
1964-65	1048922 (113.73)	409671 (252.88)	391 (222.85)	1982-83	904918 (96.11)	220800 (136.29)	244 (130.42)
1965-66	1077770 (116.86)	529063 (324.73)	491 (280.00)	1983-84	890848 (96.59)	399100 (246.35)	448 (256.00)
1966-67	1070874 (116.11)	419202 (258.76)	391 (223.42)	1984-85	873626 (94.72)	397500 (245.37)	455 (260.00)
1967-68	1078977 (116.99)	403400 (249.01)	373 (213.24)				

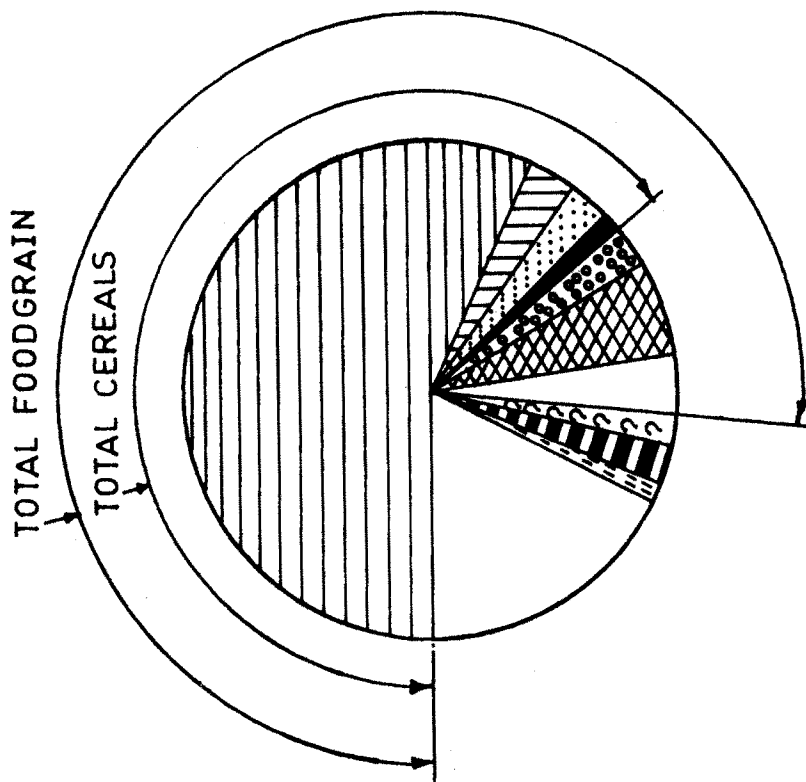
SOURCE: - As in Table No. 4.3.

FIG. 4.1'-CROPPING PATTERN OF PRINCIPAL CROPS IN SOLAPUR DISTRICT.

1950-53



1982-85



- JOWAR ; — BAJARA ; — WHEAT ; — RICE ; — TUR ;
- TOTAL PULSES, — GROUNDNUT, — SUGARCANE, — COTTON ; — OTHERS .

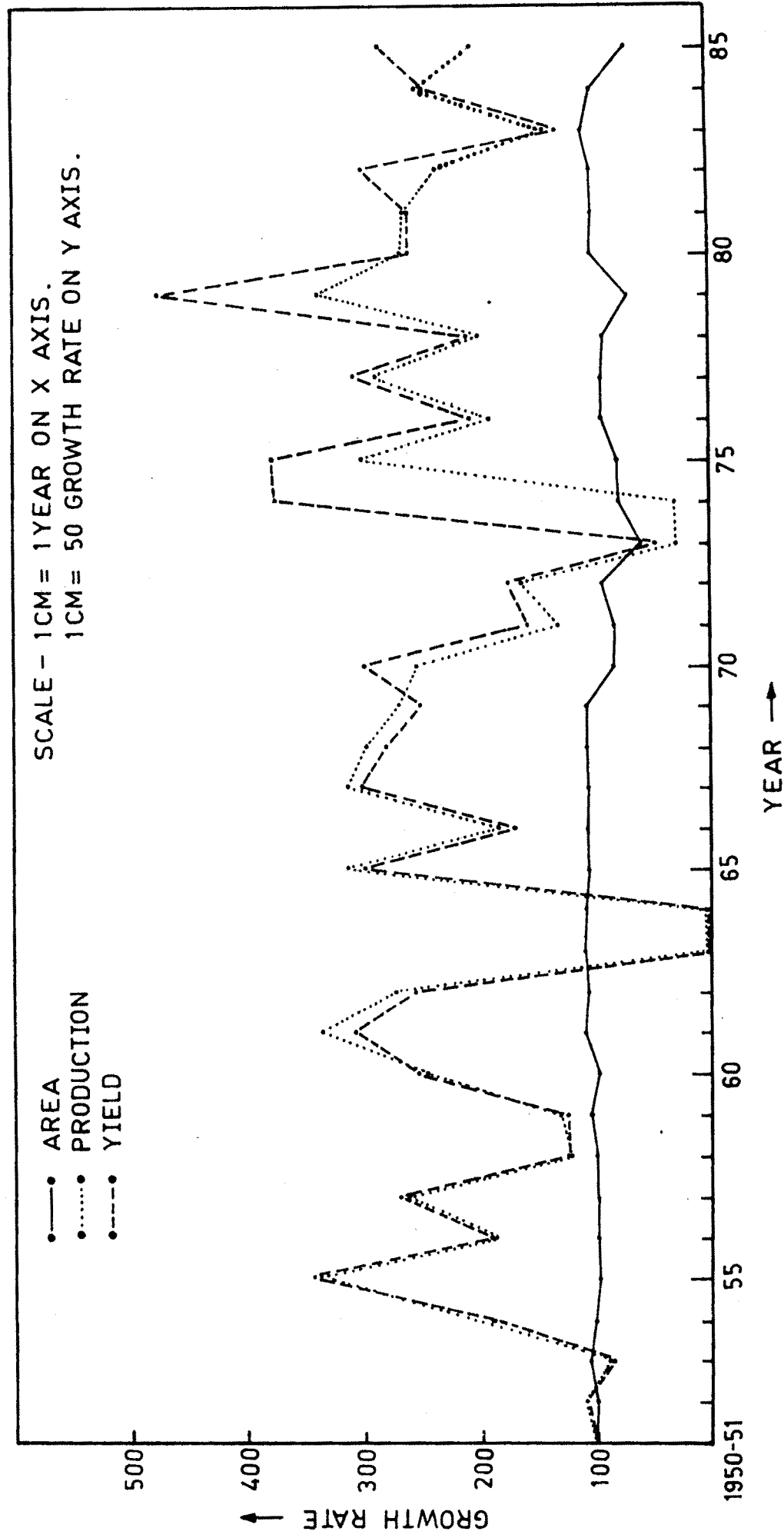


FIG. 4.1 - GRAPH SHOWING THE VARIATIONS OF AREA, PRODUCTION AND YIELD OF JOWAR IN SOLAPUR DISTRICT.

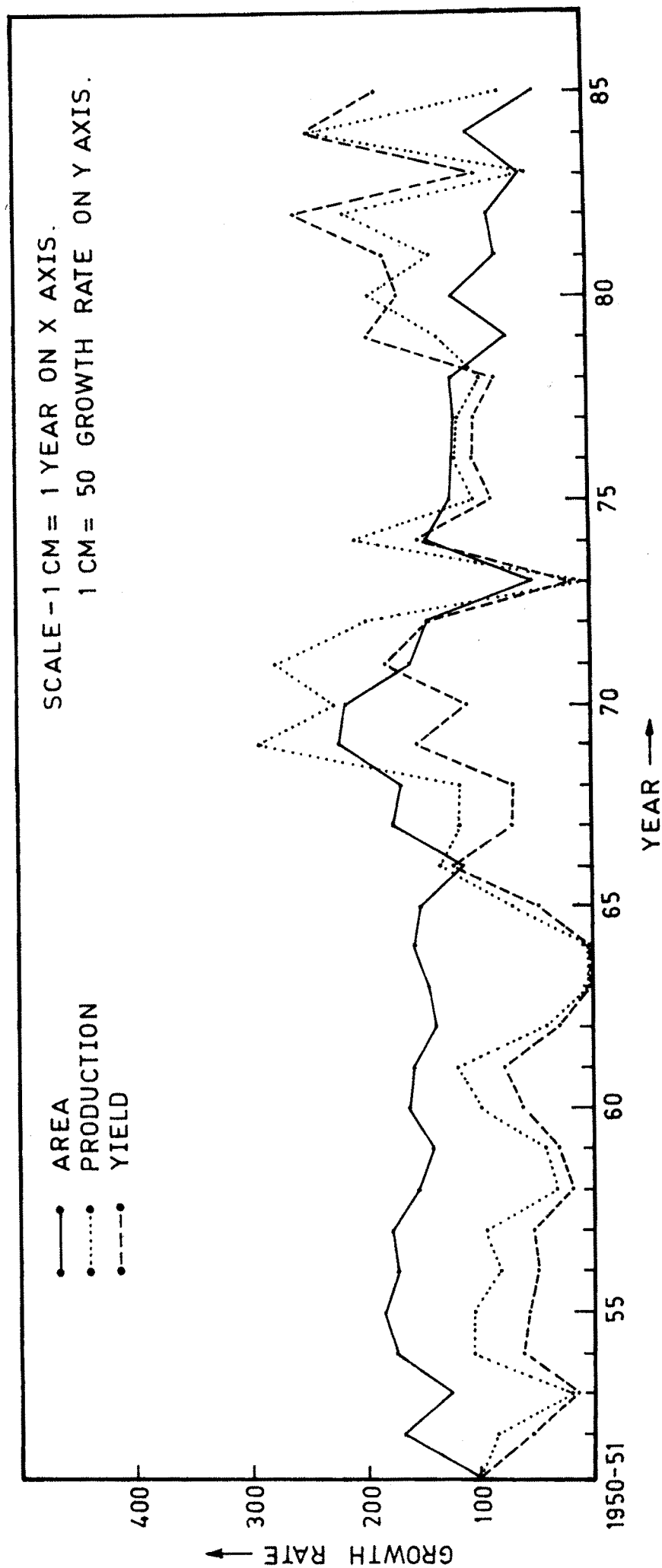


FIG. 4.2 — GRAPH SHOWING THE VARIATIONS OF AREA, PRODUCTION AND YIELD OF BAJARA IN SOLAPUR DISTRICT.

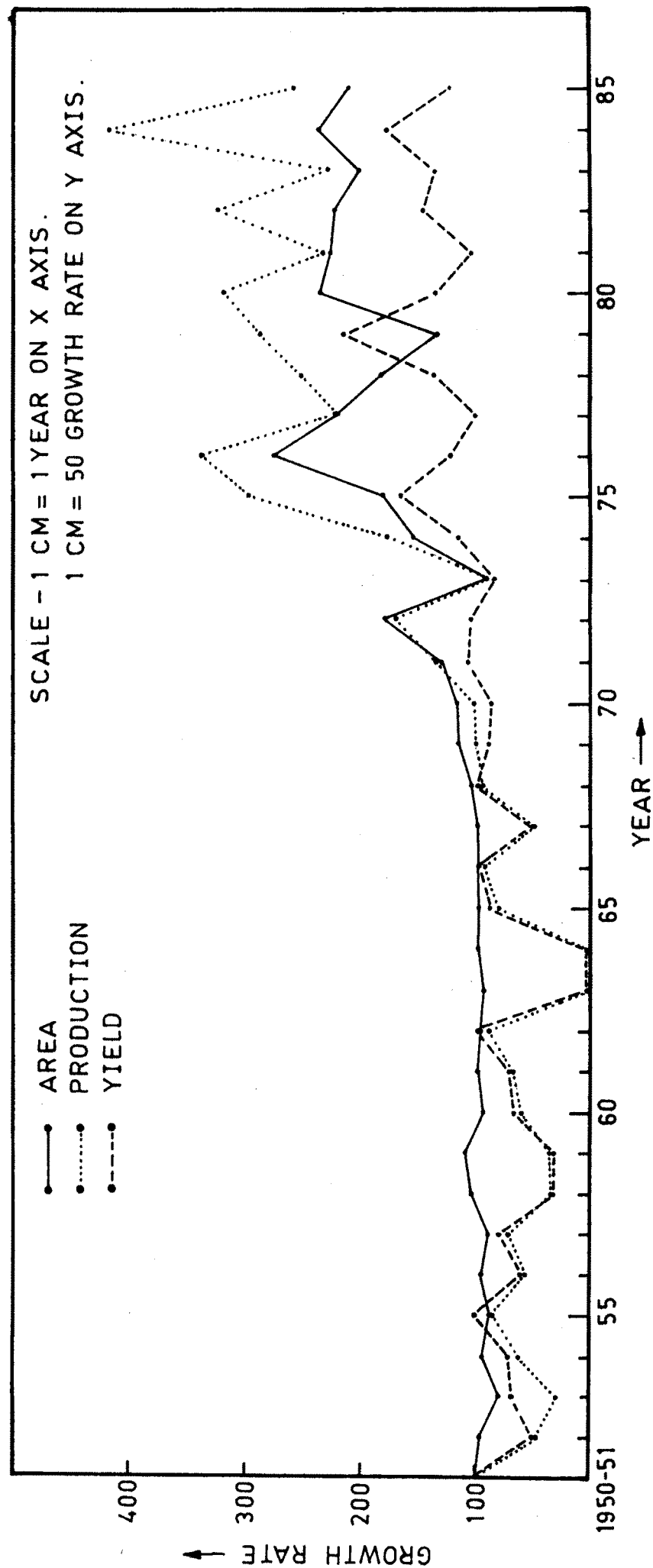


FIG. 4.3 - GRAPH SHOWING THE VARIATIONS OF AREA, PRODUCTION AND YIELD OF WHEAT IN SOLAPUR DISTRICT.

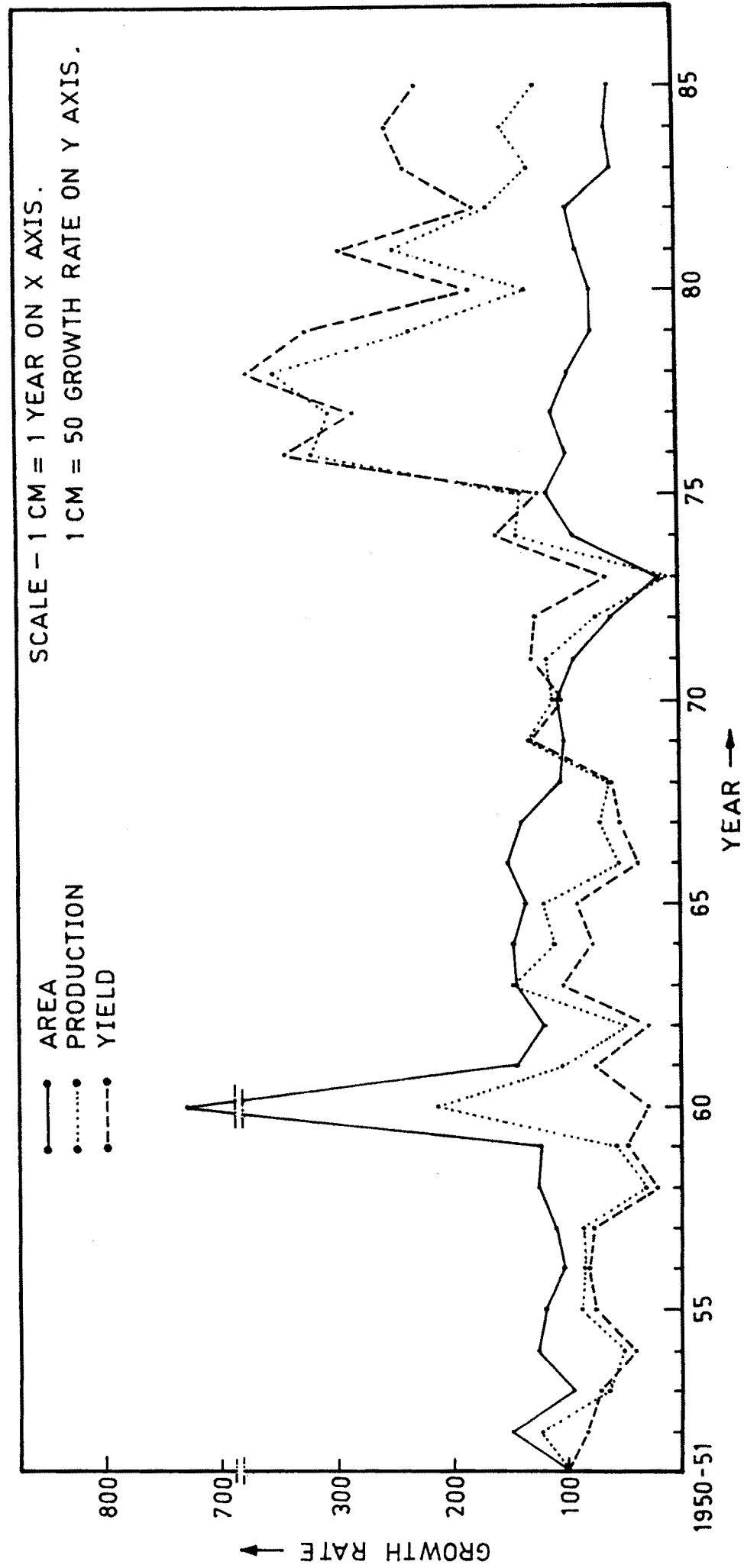


FIG.4-4 — GRAPH SHOWING THE VARIATIONS OF AREA, PRODUCTION AND YIELD OF RICE IN SOLAPUR DISTRICT.

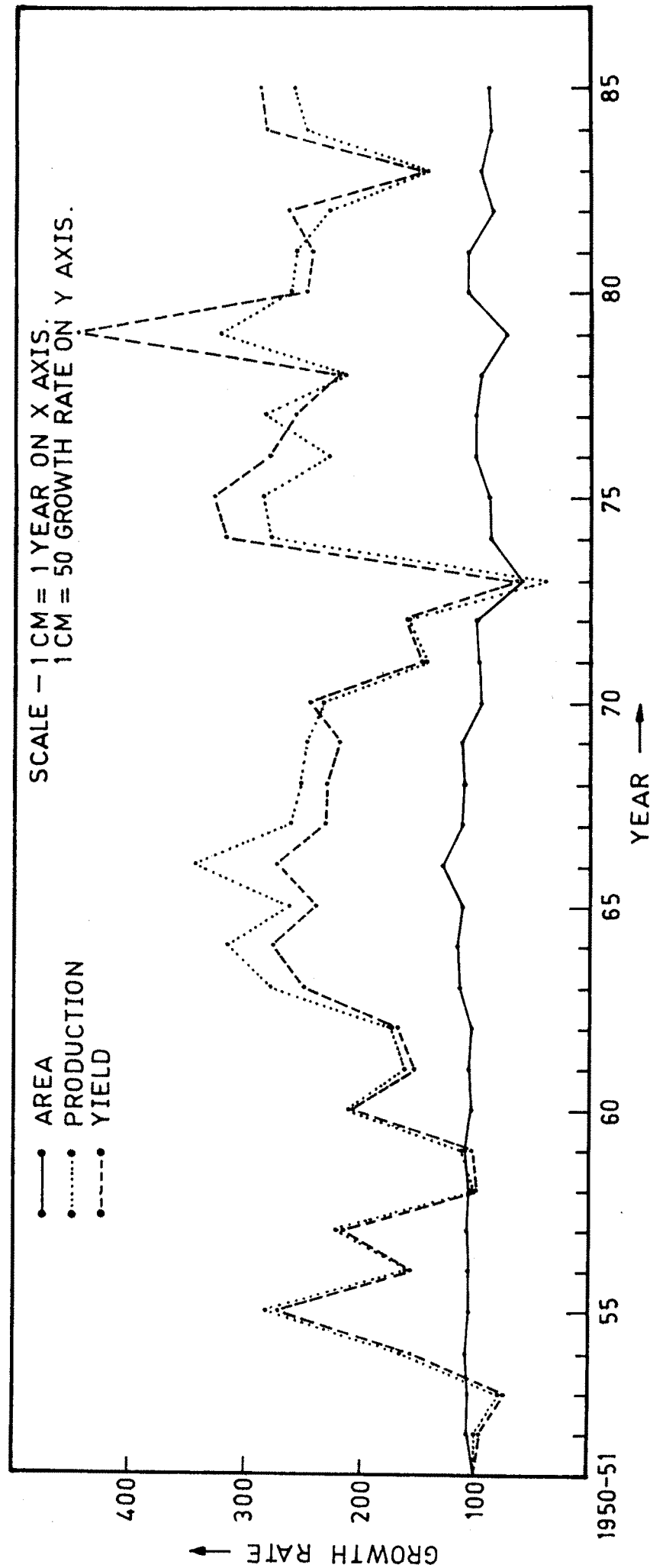


FIG.4.5 — GRAPH SHOWING THE VARIATIONS OF AREA, PRODUCTION AND YIELD OF TOTAL CEREALS IN SOLAPUR DISTRICT.

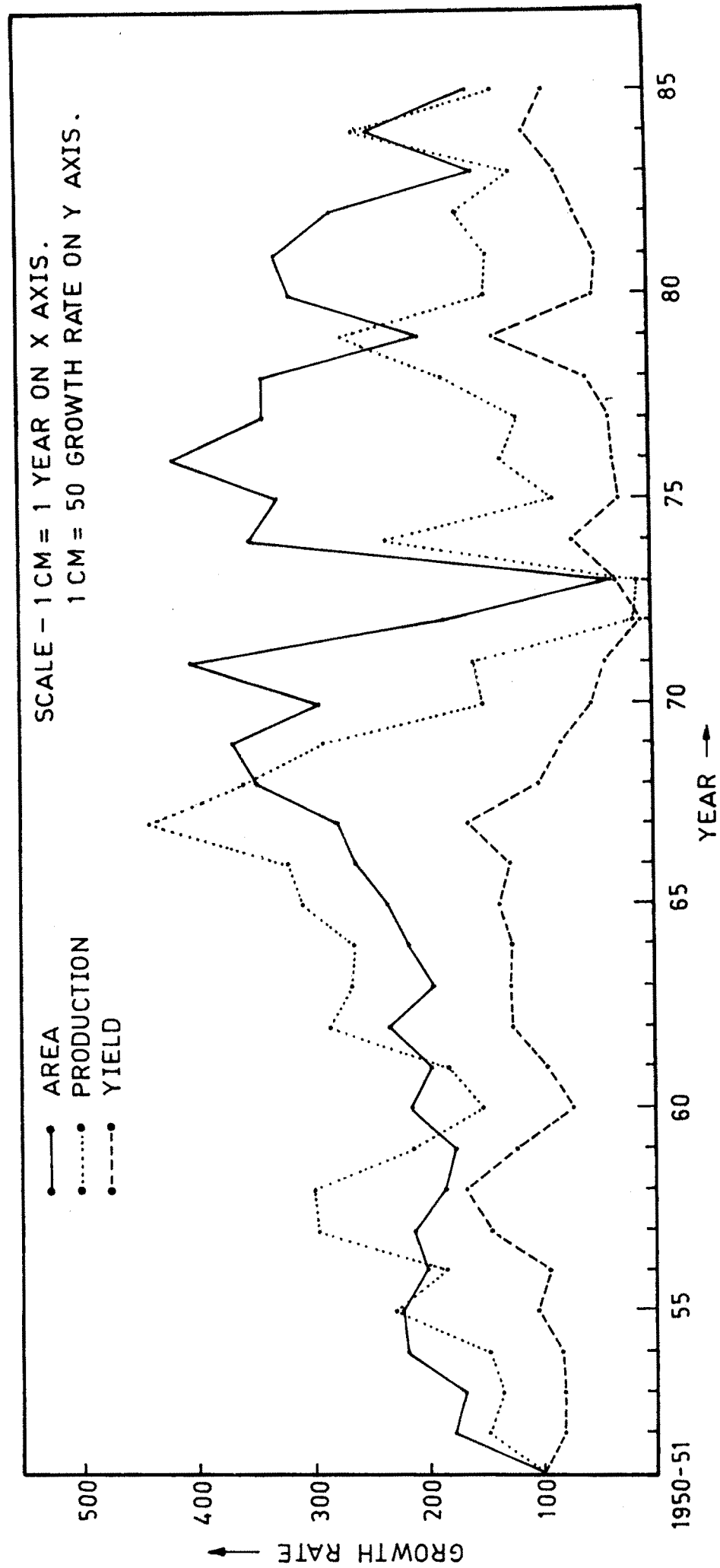


FIG. 4-6 - GRAPH SHOWING THE VARIATIONS OF AREA, PRODUCTION AND YIELD OF TUR IN SOLAPUR DISTRICT.

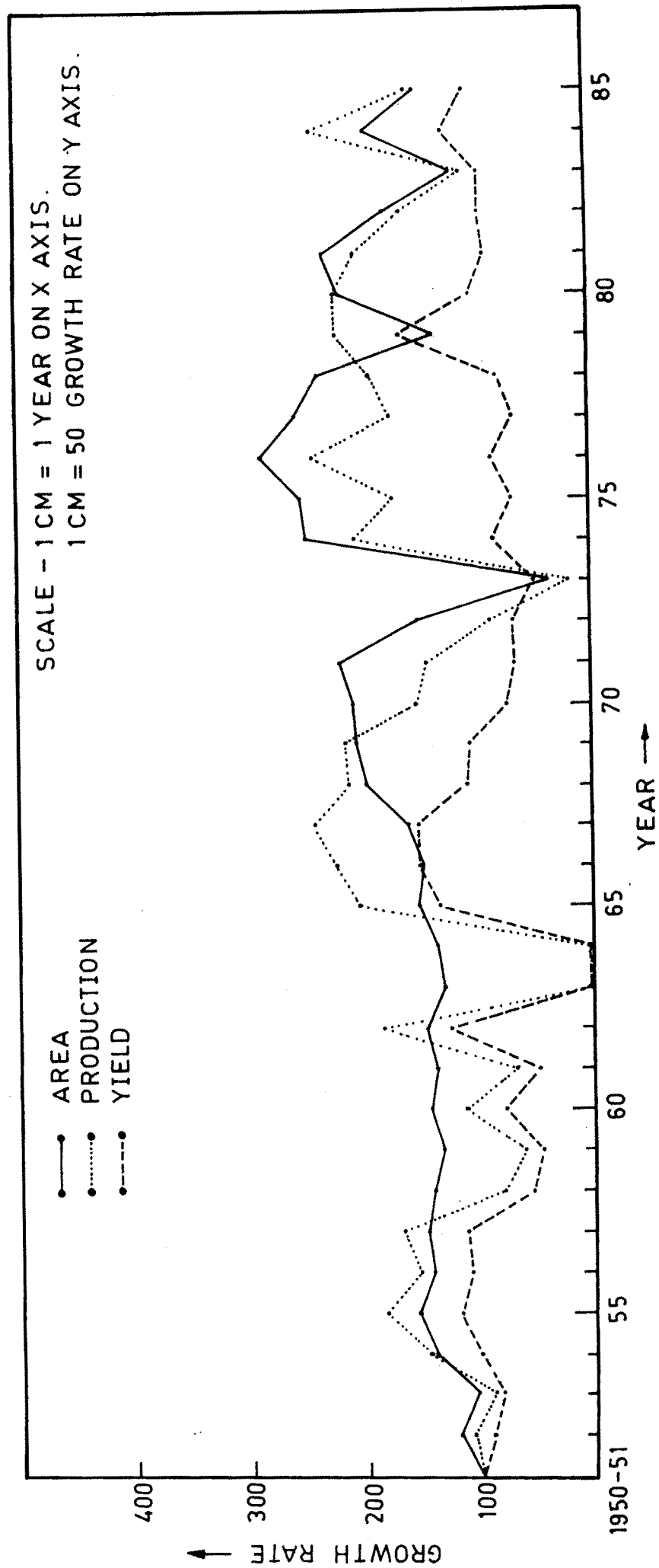


FIG. 4.7 - GRAPH SHOWING THE VARIATIONS OF AREA, PRODUCTION AND YIELD OF TOTAL PULSES IN SOLAPUR DISTRICT.

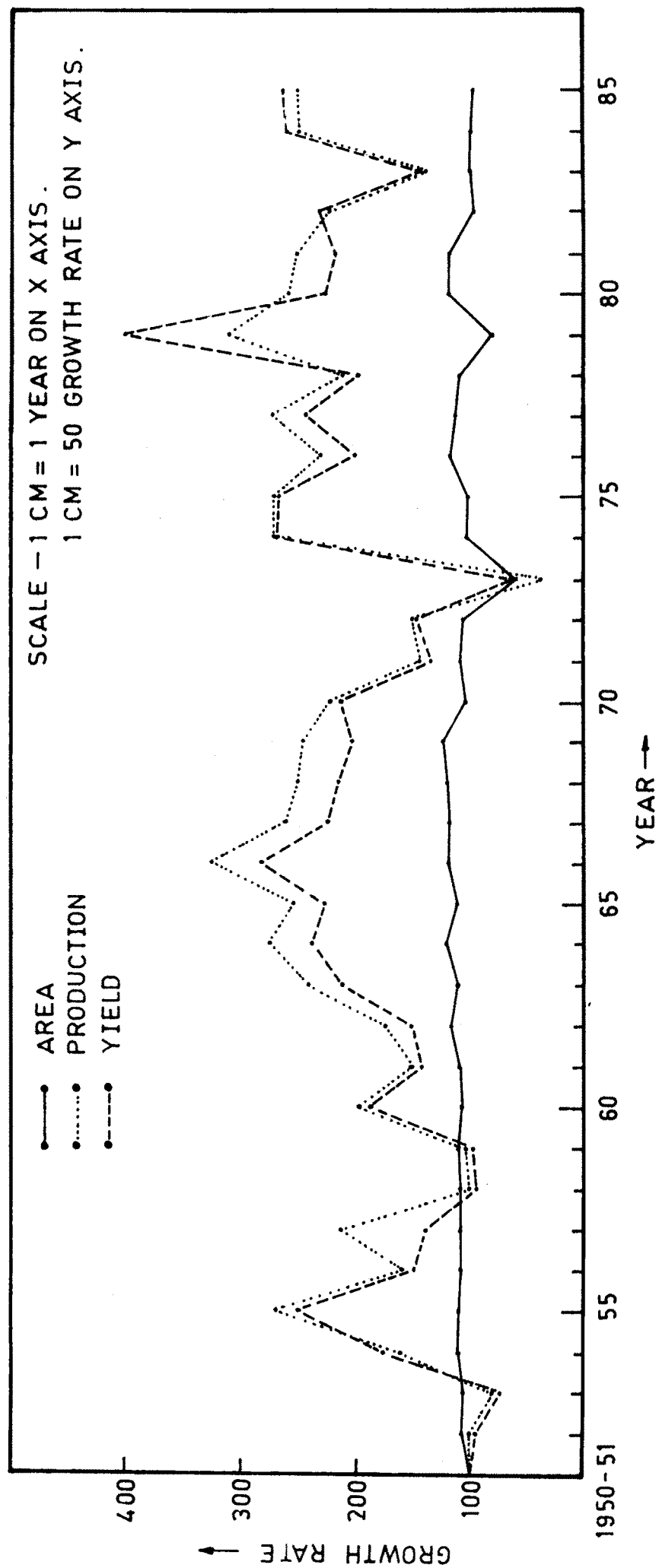


FIG. 4-8 — GRAPH SHOWING THE VARIATIONS OF AREA, PRODUCTION AND YIELD OF TOTAL FOODGRAIN IN SOLAPUR DISTRICT.