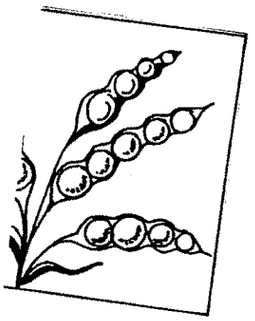


CHAPTER FOUR

CROPPING PATTERN OF FOODGRAINS : PULSES

4.1 DISTRICT AREA OF PULSES :

The focus of this chapter is on the other component of the sub-group foodgrains, viz. pulses. It purports to analyse the situation relating to the total area of pulses in Kolhapur district and taluka profile of pulses area with reference to taluka share in the district area of pulses as also taluka area under pulses as percentage of the GCA of the taluka.

Though Kolhapur district is not much known for pulses production, pulses cultivation is not totally eschewed by the district. A reference to Table 4.1 reveals that pulses area varied over the range of 14,349 (1969-72) and 26,812 (1978-81) hectares over the 27 year span in question. However, year to year fluctuations are quite uneven. It must be largely due to changes in climatic conditions. The absolute area under pulses in Kolhapur district declined during 1960 to 1975. The tendency was reversed thereafter. There was a sudden upsurge in the area in the triennium 1978-81 to the all-time records level of 26,812 hectares. But this mood of the pulses cultivations changed sooner so that the area slashed to 24,926 hectares during the triennium 1981-84 and further to 20,516 hectares during the triennium 1984-87.

This absolute change can be viewed against the GCA of Kolhapur district. In the initial triennium of 1960-63,the percentage of area under pulses to the GCA of the district stood at 4.73. With initial decline upto 1975 it then picked up and reached up to 6.9 percent by 1978-81 and thereafter again showed a declining tendency so that the last triennium (1984-87) established the same percentage as that of 1960-63 (4.73 percent).

The total result of these ups and downs in the absolute area of pulses as also its percentage to the GCA of the district was a rising trend. The indication, therefore, is that, for the cultivators in Kolhapur district pulses had not gone in disfavour; the only thing is that the decision to use land for cultivation of pulses showed considerable instability.

4.2 TALUKA PROFILE OF PULSES :

Now the investigation will concentrate on the micro-level analyses of area under study by exploring the trend from two dimensions :(a) taluka area vis-a-vis district area and (b) taluka area vis-a-vis GCA of the taluka. Further, both the dimensions will be presented with reference to three parameters : (i) average area, (ii) trends of the triennium area and (iii) coefficient of variation of the area. Details follow :-

4.2.1 TALUKA AREA VIS-A-VIS DISTRICT AREA OF PULSES :

Behaviour of the taluka area in the district setting will be studied with reference to data in Table 4.1. In columns 4 to 15 it initially gives absolute figures of the taluka area under pulses and then comes in upper parentheses percentage of the taluka area to the district total. Analyses of this section pertains to these two entries.

4.2.1.1 Average area :

A bird's eye-view of the data related to the percentage share of the taluka area in the district total and the overall average share, are presented in Table.4.2.

Table 4.2

Talukawise range of share of area under pulses (1960-87)

Taluka	Range of share	Range magnitude (percentage points)	Average share for the entire period
1. Karvir	5.45 to 9.69	4.24	8.03
2. Panhala	2.50 to 6.69	4.19	4.14
3. Shirol	20.57 to 38.86	18.29	27.79
4. Hatkanagale	14.10 to 20.02	5.92	16.97
5. Kagal	10.60 to 15.98	5.38	13.92
6. Gadhinglaj	8.99 to 12.68	3.69	11.19
7. Chandgad	1.23 to 11.29	10.06	5.94
8. Ajara	3.50 to 6.01	2.51	4.63
9. Bhudargad	1.43 to 2.15	0.72	1.71
10. Radhanagari	0.60 to 3.98	3.98	2.32
11. Gagan Bawada	0 to 0.94	0.94	0.66
12. Shahuwadi	1.03 to 3.96	2.93	2.31

Perusal of Table 4.2 vividly reveals that pulses production was concentrated in five talukas of the district, viz. Shirol, Hatkanagale, Kagal, Gadhinglaj and Karvir. The taluka list is given here according to decreasing order of their district percentage share of area. This implies firstly that pulses production in the district was undertaken by the cultivators of the plains since the agro-climatic conditions of the region are suitable for growing of pulses as a rabi crop. Secondly, of all the talukas, Shirol had the lion's share in this respect, commanding an average nearly 28 percent of the district area. The taluka had the maximum percentage share of 38.86. On the other hand, talukas of the hilly tract had modest areas under pulses due to natural constraints; the least area was devoted by Gagan Bawada which normally received the heaviest showers in the district.

As regards the range magnitude of the percentage share ofarea, Shirol had the largest magnitude of 18.29 percentage points. Then folled Chandgad with 10.06 percentage points. Thus these two talukas had fluctuations of the area within larger margins, whereas all other talukas revealed quite moderate range of variation, the least being in Bhudargad.

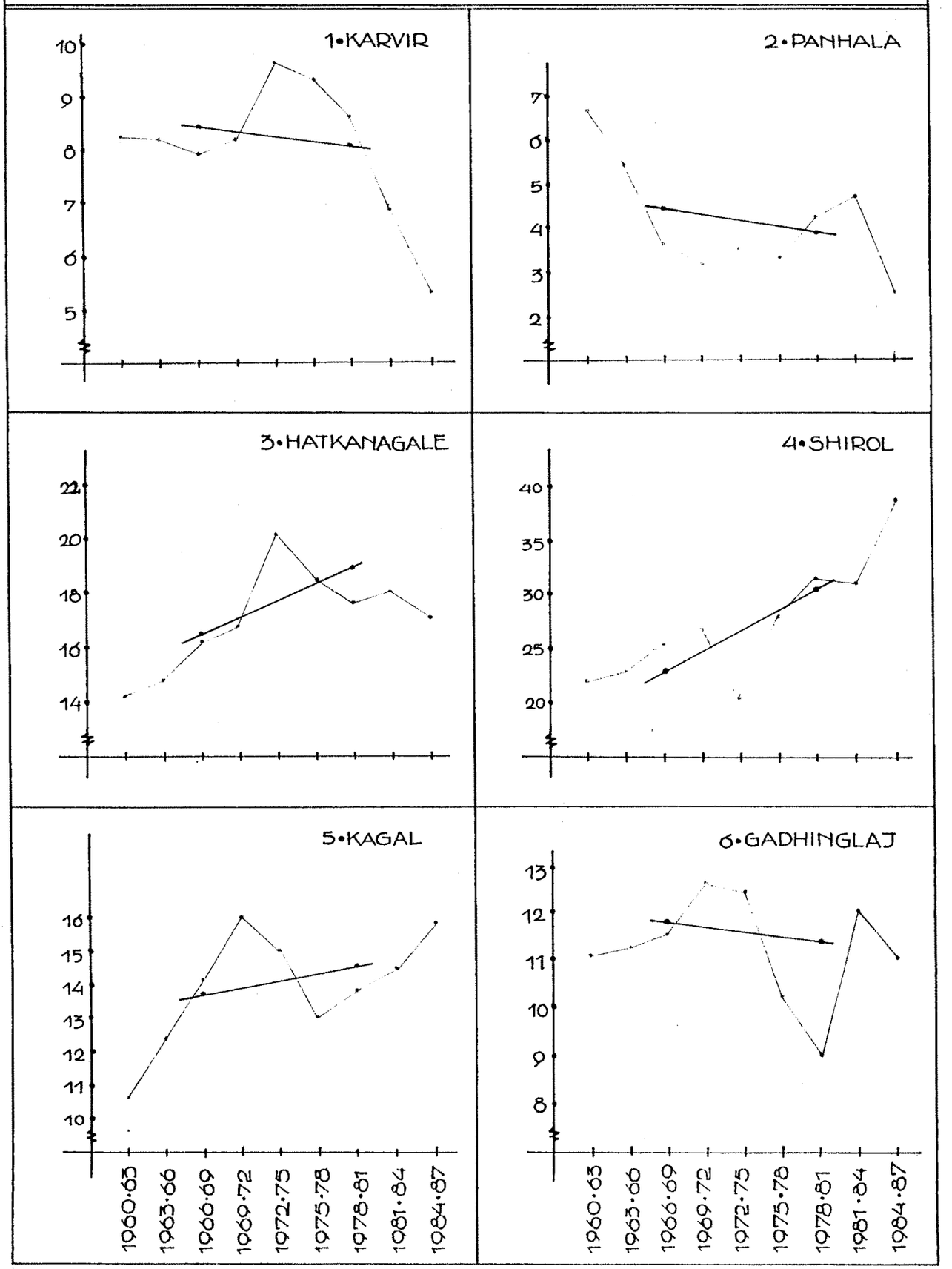
4.2.1.2 Trends :

The phenomenon of range of variations can well be analysed by fitting of a trend line for the triennium percentages of area to the district area of each taluka. Chart 7 gives the graphical presentation. Trend lines for the talukas exhibit that only Shirol, Hatkanagale, Kagal and Ajara talukas had a rising trend in the percentage area to the district total. Except Ajara, remaining three talukas were from the plains. Of these four talukas, the uptrend of Shirol was more pronounced, of Hatkanagale was medium and of Kagal and Ajara was only marginal.

Falling trend in the percentage area to the district total was revealed by the remaining eight talukas : Karvir,

■ CHART • 7

TREND OF TALUKA AREA OF PULSES VIS-A-VIS DISTRICT AREA



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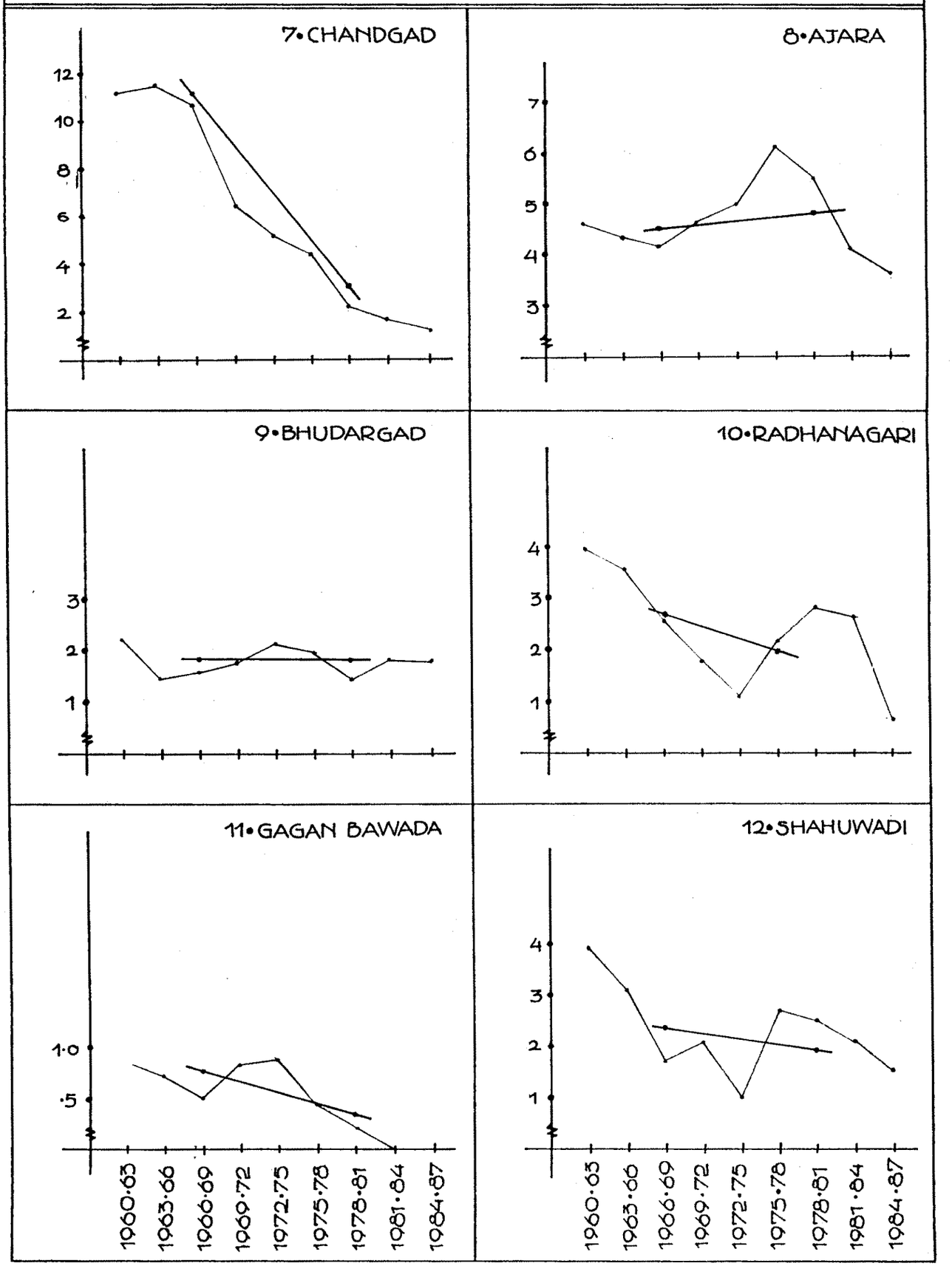


Panhala, Gadhinglaj, Chandgad, Bhudargad, Radhanagari, Gagan Bawada and Shahuwadi. Of these talukas, decline was sharp in case of Chandgad,; other talukas had the downtrend either marginal or medium.

Referring to the absolute area, Gagan Bawada had eschewed pulses cultivation since 1981-82. Chandgad had over the years drastically reduced its area from 2,246 hectares during 1960-63 to only 254 hectares during 1984-87. Hence, crop substitution in the taluka needs to be explored. Last chapter will take care of this endeavour. A tendency closer to this could be seen in Panhala which slashed its pulses area from1.361 hectares in 1960-63 to 514 hectares in 1984-87 involving frequent ups and downs of larger magnitude from one triennium to the other triennium.

4.2.1.3 Coefficient of variation :

All the talukas had annual variations in their area of pulses. Therefore, it is interesting to see degree of variations so that inter-taluka comparison can be made. Coefficient of variation has been worked out for each taluka. Higher the value, greater the degree of variability and lower the value, lesser the degree of variability. Values of coefficient are presented in Table 4.3

Table 4.3

C.V. values of taluka shares in the district area under pulses.

Taluka	Coefficient of variation (Percentage)
1. Karvir	1.64
2. Gadhinglaj	9.65
3. Hatkanagale	10.12
4. Kagal	11.85
5. Ajara	15.33
6. Bhudargad	15.78
7. Shirol	18.31
8. Panhala	29.22
9. Shahuwadi	43.29
10. Radhanagari	44.39
11. Gagan Bawada	50.00
12. Chandgad	66.16

Maximum variability is recorded by Chandgad (66.16 percent) and the minimum by Karvir (1.64 percent). Shahuwadi, Radhanagari, Gagan Bawada and Chandgad come under the group of talukas that showed considerable annual variation in the area under pulses. All the other talukas, barring Karvir, fall in the group showing variability between 10 and 20 per cent generally; only Panhala had it upto 29 per cent.

Juxtaposing the C.V.values with the trends, it could be noticed that Hatkanagale, Kagal, Ajara and Shirol talukas which exhibited an uptrend, had variability within the limits of 10 and 20 percent. Panhala, Shahuwadi, Radhanagari, Gagan Bawada and Chandgad had high coefficient values and at the same time revealed downtrend. Karvir's downtrend was only marginal and its C.V.values also is nominal; they indicate fair degree of stability in the absolute as well as percentage area of pulses in the taluka

4.2.2 TALUKA AREA OF PULSES VIS-A-VIS GCA OF THE TALUKA :

As a second dimension the taluka area will be viewed against the GCA of the taluka itself. For the purpose, figures in lower tracts of columns 4 to 15 in Table 4.1 will be used. Average area, trends and coefficient of variation will be the three parameters as usual.

4.2.2.1 Average Area :

The data on average percentage area under pulses in each triennium are briefly presented in Table 4.4

Table 4.4

Talukawise range of area under pulses as percentage of the GCA (1960-87)

(Percentages)

Taluka	Range of share	Range magnitude (percentage points)	Average share for the entire period
1. Karvir	2.46 to 4.72	2.26	3.29
2. Panhala	1.50 to 4.29	2.79	2.61
3. Shirol	6.94 to 20.32	13.38	12.98
4. Hatkanagale	5.22 to 9.57	4.35	6.97
5. Kagal	4.83 to 8.55	3.72	6.21
6. Gadhinglaj	4.37 to 7.15	2.78	5.09
7. Chandgad	0.53 to 6.01	5.48	2.73
8. Ajara	2.35 to 4.96	2.61	3.57
9. Bhudargad	0.93 to 1.71	0.78	1.23
10. Radhanagari	0.38 to 2.78	2.40	1.52
11. Gagan Bawada	0 to 1.32	1.32	0.79
12. Shahuwadi	0.43 to 2.53	2.10	1.35

The pictures of taluka areas as percentages of the GCA of the talukas appears to be strikingly different from the one revealed by the taluka percentages to the district areas. As per Table 4.4 only Shirol devoted more than 10 per cent (actually, 12.98 per cent) of its cultivated land for pulses. This taluka had the largest share in the district total. Hatkanagale, Kagal and Gadhinglaj utilised 5 to 7 percent of their GCA while the rest of the talukas utilised barely 1 to 3 per cent of their GCA for pulses.

Furthermore, the magnitude of variations remained largest with Shirol (13.98 percentage points) perhaps because it had the largest area within the district. All other talukas had the minimum and maximum within a range of 5 percentage points and below. This can will be attributed to their small share in the GCA of the taluka.

4.2.2.2 Trends :

The ups and down from triennium to triennium can now be transferred to find out the trend of change over the 27 years under reference. Talukawise trend lines are shown

CHART • 8

TREND OF TALUKA AREA OF PULSES AS PERCENTAGE OF ITS GCA

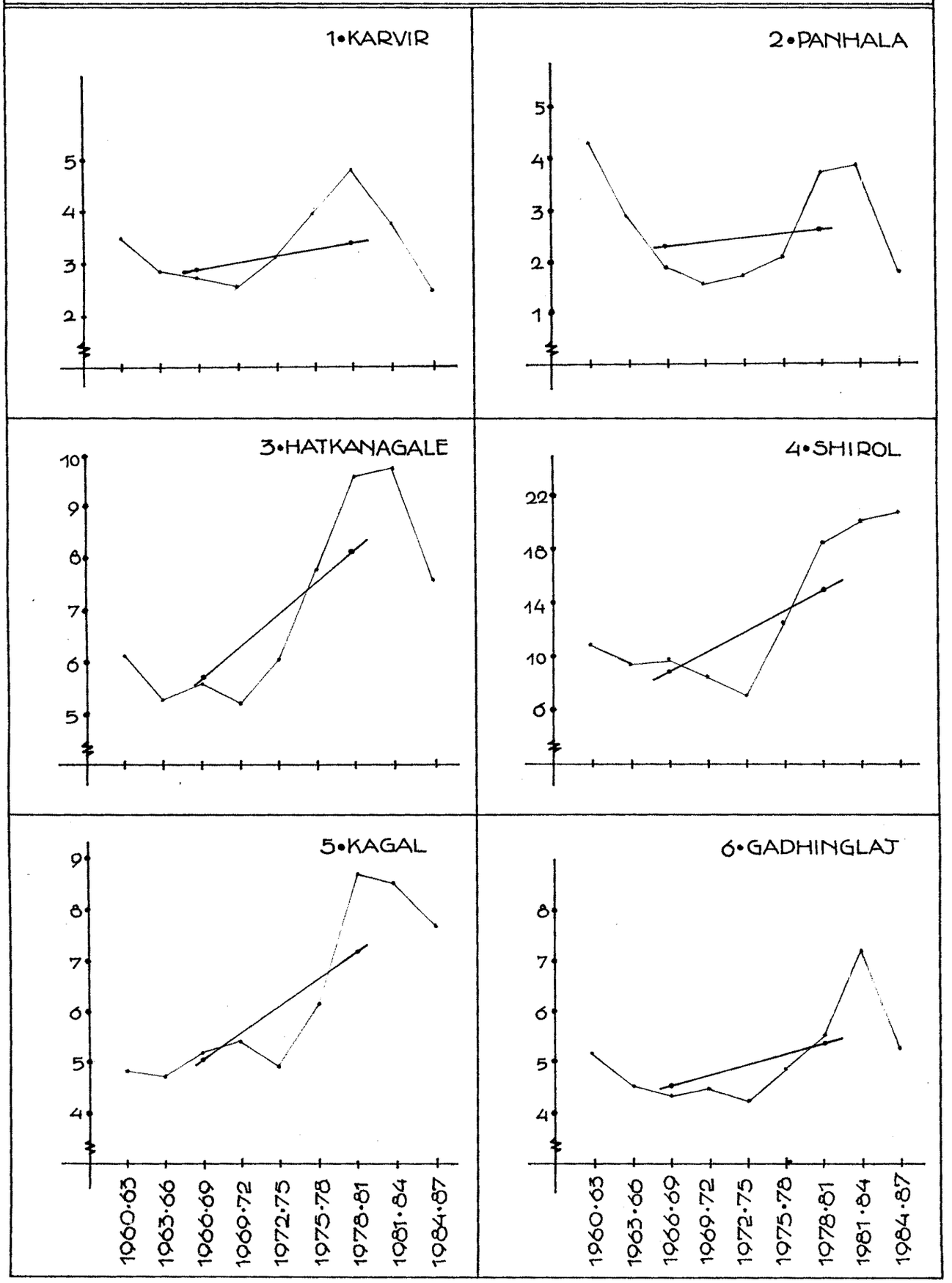
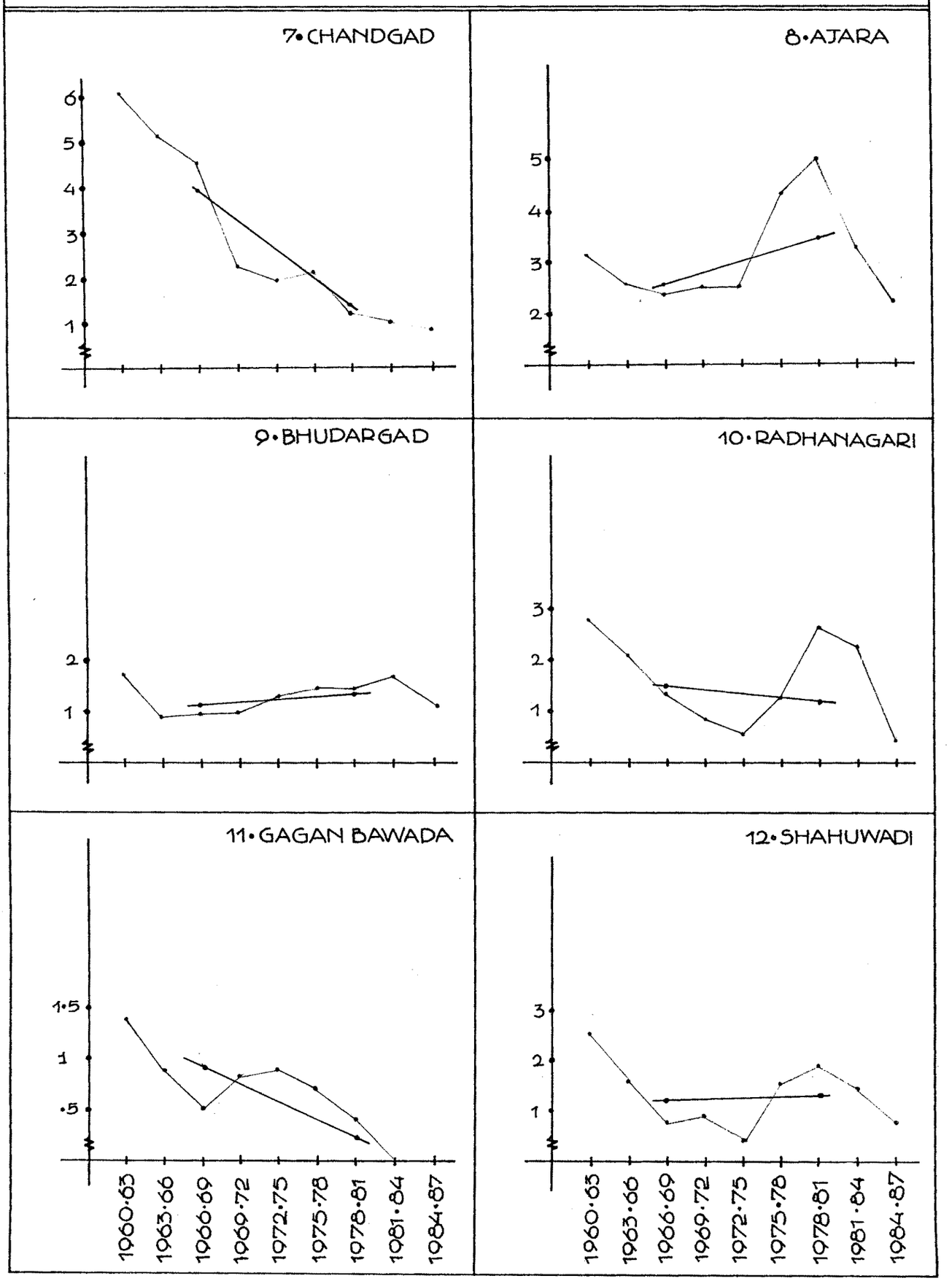


CHART •8 (CONTINUED)



in chart 8. A glance at the graphical presentations reveals rising trends of Karvir, Panhala, Shirol, Hatkanagale, Kagal, Gadhinglaj, Ajara and Bhudargad. The upward slant of the trend line is more in case of Shirol, Hatkanagale and Kagal and is marginal with Panhala, Ajara and Bhudargad. All these talukas together contributed to an overall rise of pulses area in the district. Eventhough Chandgad, Radhanagari, Gagan Bawada and Shahuwadi talukas exhibited downtrends, their cumulative impact could not counterbalance the cumulative uptrend for the simple reason that their share in the aggregate district area of pulses was very much less.

4.2.2.3 Coefficient of variation :

The degree of variations in the year-to-year percentages of area under pulses to the GCA of the talukas is measured with the help of coefficient of variation. Coefficient values of the talukas are given in Table 4.5.

Table 4.5

C.V.values of taluka shares of pulses in their GCA

Taluka	Coefficient of variation (percentage)
1. Gadhinglaj	16.69
2. Karvir	20.94
3. Bhudargad	21.13
4. Hatkanagale	22.95
5. Kagal	23.18
6. Ajara	28.38
7. Gagan Bawada	30.37
8. Shirol	37.21
9. Panhala	38.31
10. Shahuwadi	45.18
11. Radhanagari	51.97
12. Chandgad	67.76

Examination of Table 4.5 indicates fairly high values of the coefficients of all the talukas, the lowest value

being 16.69 percent for Gadhinglaj. Karvir, Bhudargad, Hatkanagale, Kagal, Ajara, Gagan Bawada, Shirol and Panhala ranged between 20 and 40 per cent. Shahuwadi, Radhanagari and Chandgad remained in very high bracket of the coefficient. These three talukas, thus, had very high degree of variability in utilisation of land for pulses. Even the range of 20 to 40 per cent attained by the remaining talukas also is a manifestation of high degree of annual fluctuation in the area. All this implies that pulses cultivation in Kolhapur district was subject to constant variations and thereby ups and downs of high magnitude characteristic of instability of cultivation.

4.3 DISTRICT AREA OF TUR AND GRAM : RELATIVE SHARES :

Pulses production in Kolhapur district was, for a long time, dominated by tur and gram. Especially upto 1980-81, these two crops, covered nearly 45 to 50 per cent of the area under pulses. Since 1980-81, there occurred a drastic change so that tur and gram cultivation was largely discontinued in favour of moong cultivation and phenomenon continued for all the years in the eighties. Thus, substitution of moong for tur and gram was a noteworthy change in the cropping pattern of pulses in Kolhapur district.

As far a long time, the district concentrated on growing tur and gram on priority basis, present investigation has been delimited to these two crops. Their relative shares in pulses area is indicated in Table 4.6. During the decade of nineteen sixties, tur

Table 4.6

Relative shares of tur and gram in pulses area of Kolhapur district.

(Area in hectares)

Year	Total pulses	Tur	Gram
1960-61	20,567 (100-00)	7,181 (34.91)	3,513(17.08)
1970-7	14,583 (100.00)	5,004 (34.31)	1,889 (12.95)
1980-81	29,493 (100-00)	4,433 (15.03)	9,164 (31.07)
1986-87	17,327 (100-00)	995 (5.74)	691 (3.98)

Note : Figures in parentheses are percentages to total

dominated the scene by commanding nearly one-third of the district area under pulses. The share of gram was nearly one-half or less than that of the tur area. But over the seventies, the relative positions were changing so that in 1980-81, the gram area was double that of tur. However, thereafter, the cultivators seem to have gone in disfavour of using the land for these two crops. By 1986-87, hardly 4 to 6 per cent of district land under pulses came to be used for each of tur and gram. This, certainly, was a very striking change in the cropping pattern of the district.

4.4 DISTRICT AREA OF TUR : TRIENNIUM BEHAVIOUR :

Column 3 of Table 4.7 gives the triennium figures of tur in Kolhapur district. During 1960-63, tur occupied 6,803 hectares, but thereafter a gradual decline set in bringing the area down to 5,114 hectares in 1969-72. This meant a decline by 24.83 percent. The triennium 1972-75 saw considerable reduction in area principally due to drought conditions of 1972-73. Thereafter, the cultivation again picked up, but even by end-eighties it did not reach the height even of 1960-72. Eighties was perhaps the worst period as the area slumped conspiciously to touch the lowest level of 1,103 hectares in 1984-85. Compared to the triennium 1960-63, this figure was low by 83.79 per cent.

Looked at the samed phenomenon from the angle of this area as percentage of the GCA of Kolhapur district, the share of tur was insignificant. Initially it shares about 1.5 per cent of the GCA, but ultimately the share dropped to merely 0.25 percent.

The upshot is that tur cultivation in Kolhapur district exhibited a sharp downtrend.

4.5 TALUKA PROFILE OF TUR :

Taluka scenario of tur can be examined with the help of data presented in columns 4 to 15 of Table 4.7. These columns exhibit the absolute area of tur in each taluka (a) area under tur in the district and (b) the GCA of the taluka. In both the

(Area in Hectares)

riennial Years	Bhudargad	Radhanagari	Gaganbawada	Shahuwadi
1	12	13	14	15
1960-61 to 1962-63	114 (1.67) (0.42)	23 (0.34) (0.07)	1 (0.01) (0.01)	68 (0.99) (0.21)
1963-64 to 1965-66	69 (1.10) (0.26)	29 (0.46) (0.09)		31 (0.49) (0.09)
1966-67 to 1968-69	57 (0.99) (0.22)	15 (0.25) (0.05)		23 (0.40) (0.07)
1969-70 to 1971-72	61 (1.19) (0.25)	16 (0.30) (0.05)	2 (0.04) (0.01)	19 (0.36) (0.05)
1972-73 to 1974-75	45 (1.24) (0.18)	18 (0.49) (0.06)	1 (0.02) (0.01)	15 (0.41) (0.04)
1975-76 to 1977-78	28 (0.02) (0.11)	14 (0.32) (0.04)	5 (0.11) (0.03)	19 (0.42) (0.05)
1978-79 to 1980-81	91 (1.85) (0.33)	22 (0.44) (0.06)		37 (0.74) (0.10)
1981-82 to 1983-84	82 (4.22) (0.29)	9 (0.44) (0.02)		27 (1.38) (0.07)
1984-85 to 1986-87	42 (3.80) (0.13)	9 (0.84) (0.02)		10 (0.87) (0.02)
rage for)-61 to)-87	(1.78) (0.24)	(0.43) (0.5)	(0.04) (0.01)	(0.67) (0.07)

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cases, the data is scanned by applying the three parameters, viz. (i) average area, (ii) trend and (iii) coefficient of variation. The interpretations follow.

4.5.1 TALUKA AREA VIS-A-VIS DISTRICT AREA OF TUR :

In columns 4 to 15 of Table 4.7, initially absolute area of tur in each taluka is given. Then figures in upper parentheses relate to the percentage of the absolute area to the district total of tur area.

4.5.1.1 Average Area :

The average share of each taluka in the district total area of pulses and the range within which the percentage share moved during the 27 years under reference is shown in Table 4.8.

Table 4.8

Talukawise range of share of area under tur (1960-87)

(Percentages)

Taluka	Range of share	Range magnitude (percentage points)	Average share for the entire period
1. Karvir	7.02 to 10.94	3.92	9.24
2. Panhala	2.60 to 7.31	4.71	3.88
3. Hatkanagale	26.23 to 29.68	3.45	27.97
4. Shirol	13.29 to 40.50	27.21	28.41
5. Kagal	7.11 to 22.30	15.19	14.11
6. Gadhinglaj	7.71 to 13.14	5.43	10.55
7. Chandgad	0.01 to 0.99	0.98	0.53
8. Ajara	1.53 to 3.19	1.66	2.09
9. Bhudargad	0.02 to 4.22	4.20	1.78
10. Radhanagari	0.25 to 0.89	0.64	0.43
11. Gagan Bawada	0 to 0.11	0.11	0.01
12. Shahuwadi	0.36 to 1.38	1.02	0.67

A cursory look at the Table 4.8, points out that

81 per cent of the area under tur was concentrated in four talukas, viz. Hatkanagale, Shirol, Kagal and Gadhinglaj. These talukas also predominated in the district in jowar cultivation. Normally, tur is taken as a mixed crop with jowar. Shirol taluka was first in order closely followed by Hatkanagale. Kagal had a share half the share of Shirol for the entire time-series. Karvir taluka stood fifth in order and close to Gadhinglaj. If Karvir's share is added to the sum of shares of the first four talukas, these five talukas cumulatively commanded 90 per cent of district land under tur. They are the talukas of plains. Talukas of the hilly region were really no producers of tur; especially Gagan Bawada, Radhanagari, Chnandgad and Shahuwadi fell into this category. Other talukas of the hilly tract had only normal share.

For studying the magnitude of range between the minima and maxima, it would be fruitful to focus attention on the five major talukas only for the sake of inter-taluka comparison. The topmost Shirol had the widest range; Kagal followed next to it. Other three had modest range of 3 to 5 percentage points. Lowest was Hatkanagale.

Finally, with respect to the five major talukas, extent of fall in absolute area may be considered with reference to the first triennium (1960-63) and the last one (1984-87). The talukas followed in the following order on the basis of percentage fall : Shirol (91.25 per cent), Karvir (86.62 per cent), Hatkanagale (82.26 per cent), Gadhinglaj (81.50 per cent) and Kagal (73.23 per cent). The top ranker Shirol was thus most sensitive amongst all.

4.5.1.1 Trends :

Time series data for the triennial years may now be juxtaposed to find out the general trend in each of the talukas, in order to know the general behaviour of the taluka area over the entire time. Trend lines are presented in chart 9. Increasing trend could be observed

■ CHART·9

TREND OF TALUKA AREA OF TUR VIS-A-VIS DISTRICT AREA.

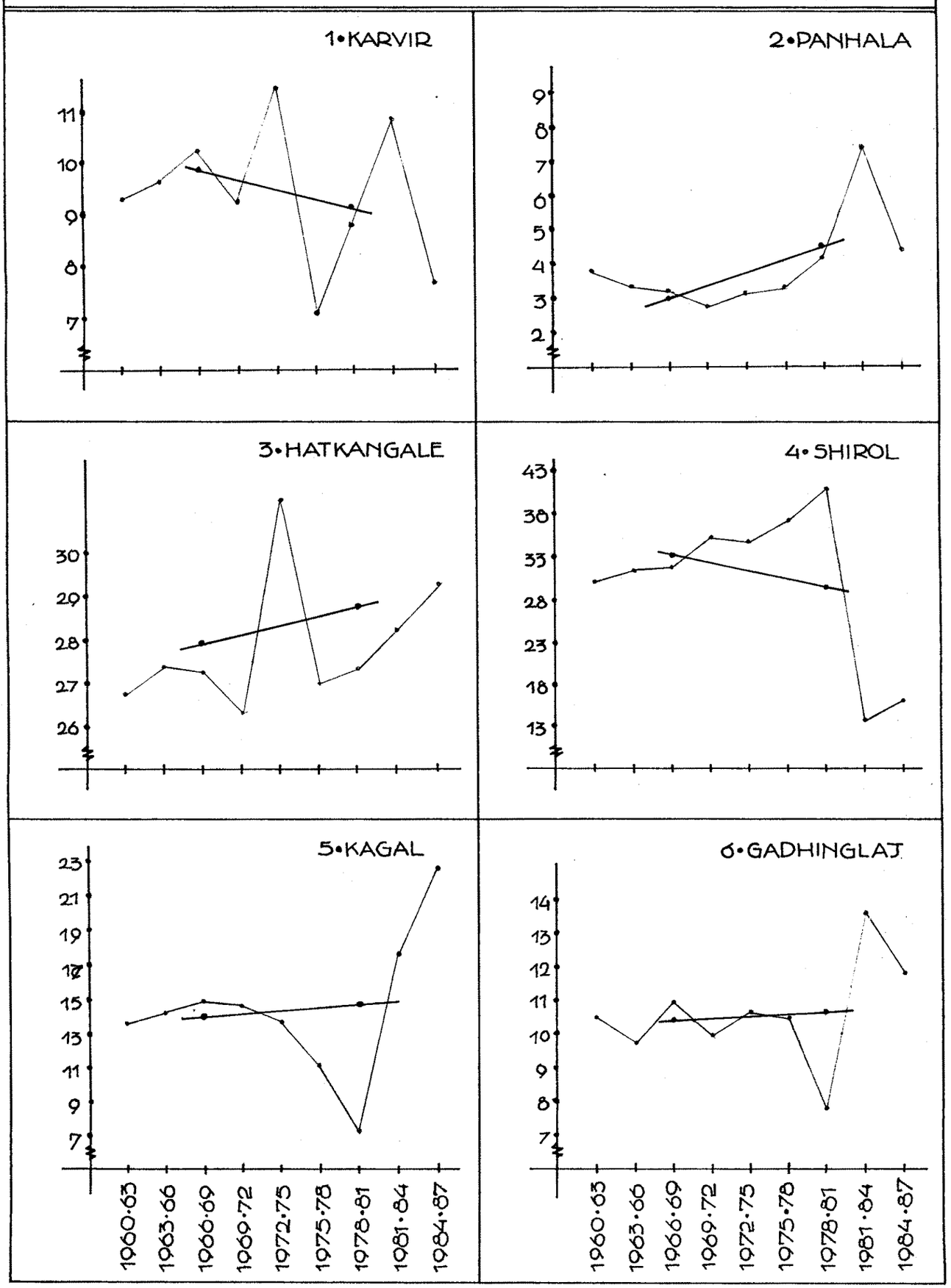
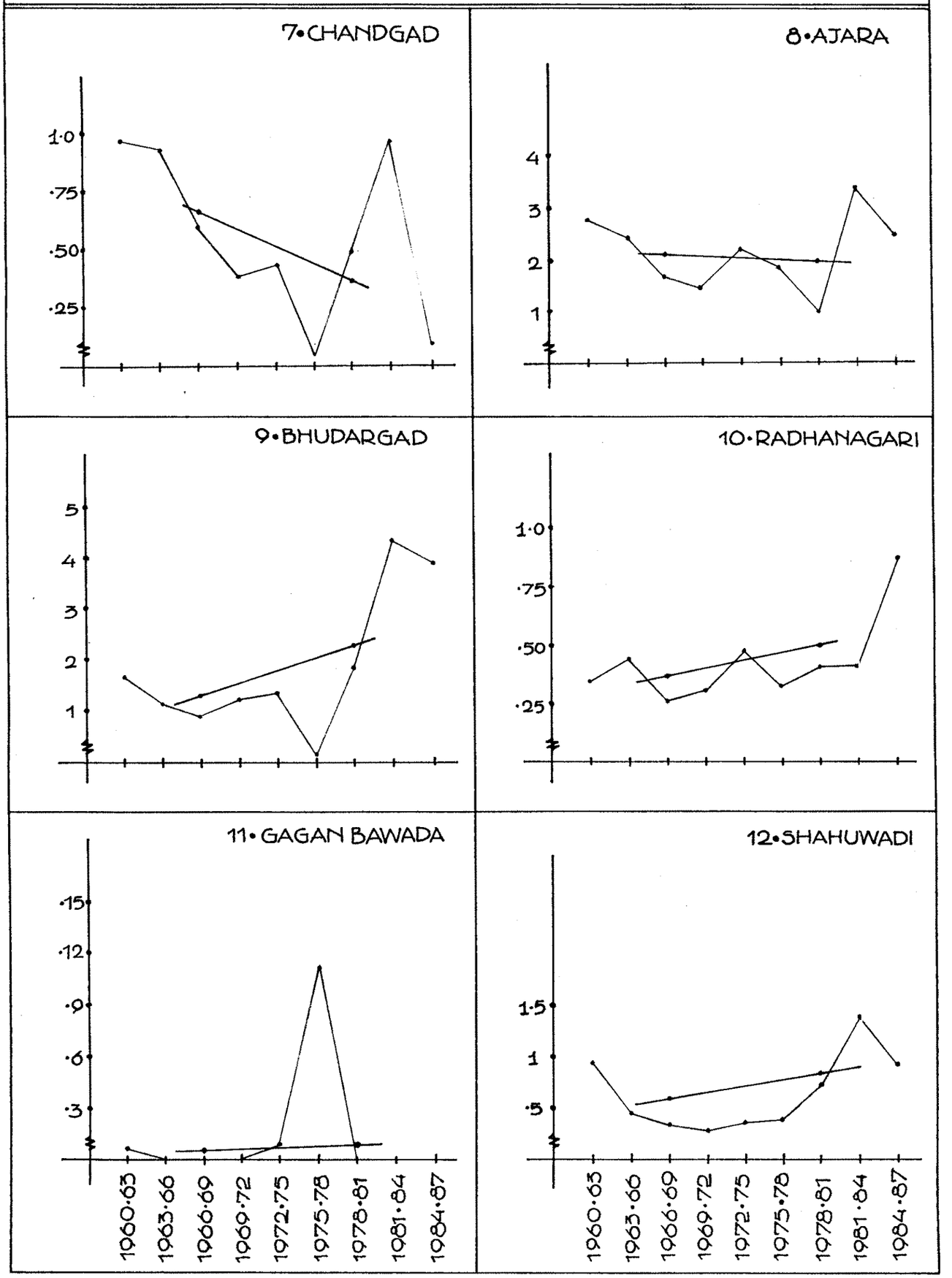


CHART • 9 (CONTINUED)



in case of Panhala, Hatkanagalem Kagal, Bhudaggad, Radhanagari, Gagan Bawada and Shahuwadi. The upward slant marginal for Hatkanagale and Kagal, which are from the major tur producing talukas. On the other hand, Karvir, Shirol, Gadhinglaj, Chandgad and Ajara exhibited downward tendency. Of these talukas Karvir, Gadhinglaj and Ajara had only a marginal fall, whereas the top-ranker Shirol had pronounced downtrend. Chandgad too had similar trend position.

Eventhough the number of talukas revealing uptrend was more than those exhibiting untrend, overall district position followed a sharp downtrend. It implies that the downward movement of the percentage area of these talukas to the district total was much larger than the upward movement in the percentage area of the talukas exhibiting uptrend. Another point, The aggregate percentage area commanded by the group of downtrend talukas (50.82 percent) had a slight edge over that commanded by the group of uptrend talukas (48.85 percent). Even this must have contributed to overall downtrend for the district. Moreover, the topmost Shirol had downtrend of greater intensity as against only a marginal upward slant of closely following Hatkanagale.

4.5.1.3 Coefficient of variation :

Previous two sub-section delved into the range and direction of change in the percentage area of each taluka. Intensity of change is the third dimension. How intensely the area fluctuated from one period to another is a matter which would throw light on the stability or instability of the production area. The degree of change is indicated by the coefficient of variation. Talukawise results of the coefficient are presented in Table 4.9

Table 4.9

C.V. values of taluka shares of tur in their GCA :

Taluka	Coefficient of variation (Percentage)
1. Hatkanagale	5.97
2. Gadhinglaj	13.17
3. Karvir	14.68
4. Chandgad	20.75
5. Kagal	27.30
6. Shirol	30.58
7. Ajara	32.05
8. Panhala	33.50
9. Radhanagari	34.88
10. Shahuwadi	47.76
11. Bhudargad	71.96
12. Gagan Bawada	-

A glance at Table 4.9 would indicate that except Hatkanagale, all the other talukas recorded considerable degree of variation in period to period average area of tur in each taluka in the district total. Hatkanagale was more or less stable within narrow limits of variations. Gadhinglaj and Karvir had the coefficient values little more than dpuble the value of Hatkanagale. All the talukas of western hilly tract, though sharing, insignificant proportions of the district area, had ups and downs of relatively larger magnitudes. Gagan Bawada was no producer of tur, and hence nil value.

4.5.2 TALUKA AREA OF TUR VIS-A-VIS GCA OF THE TALUKA :

The absolute area under tur in each taluka would now be viewed against the GCA of the taluka. For the purpose, percentages of the taluka area to the GCA of the taluka have been calculated and shown in the lower parentheses in columns 4 to 15 of Table 4.7. Interpretations of the triennium figures are presented below with reference to

average area, trends and coefficient of variation.

4.5.2.1 Average area :

A skeleton of the overall average area devoted for tur cultivation by each taluka and the range within which the area moved during 1960-87 is given in Table 4.10.

Table 4.10

Talukawise range of area under tur as percentage of the GCA (1960-87)

(Percentages)

Taluka	Range of share	Range magnitude (percentage points)	Average share for the entire period
1. Karvir	0.18 to 1.35	1.17	0.88
2. Panhala	0.15 to 0.83	0.68	0.51
3. Hatkanagale	0.71 to 3.85	3.14	2.58
4. Shirol	0.44 to 4.63	4.19	3.16
5. Kagal	0.56 to 2.07	1.51	1.35
6. Gadhinglaj	0.31 to 1.65	1.34	1.07
7. Chandgad	0.01 to 0.18	0.17	0.06
8. Ajara	0.08 to 0.65	0.57	0.30
9. Bhudargad	0.11 to 0.42	0.31	0.24
10. Radhanagari	0.02 to 0.09	0.07	0.05
11. Gagan Bawada	0 to 0.04	0.04	0.01
12. Shahuwadi	0.02 to 0.21	0.19	0.07

A close examination of Table 4.10 vividly reveals the conspicious position of Hatkanagale alone in utilising a significant share of its GCA for tur cultivation (27.97 per cent). It had no match in the district. Other four talukas prominent in the district setting had hardly 1 or2 per cent of their GCA under tur; these talukas are Shirol, Kagal, Gadhinglaj and Karvir. All the other talukas had negligible proportion of their GCA under tur. In sum, in the real sense, tur cultivation in Kolhapur district was largely concentrated in Hatkanagale taluka as can be judged

■ CHART • 10

TREND OF TALUKA AREA OF TUR AS PERCENTAGE OF ITS GCA

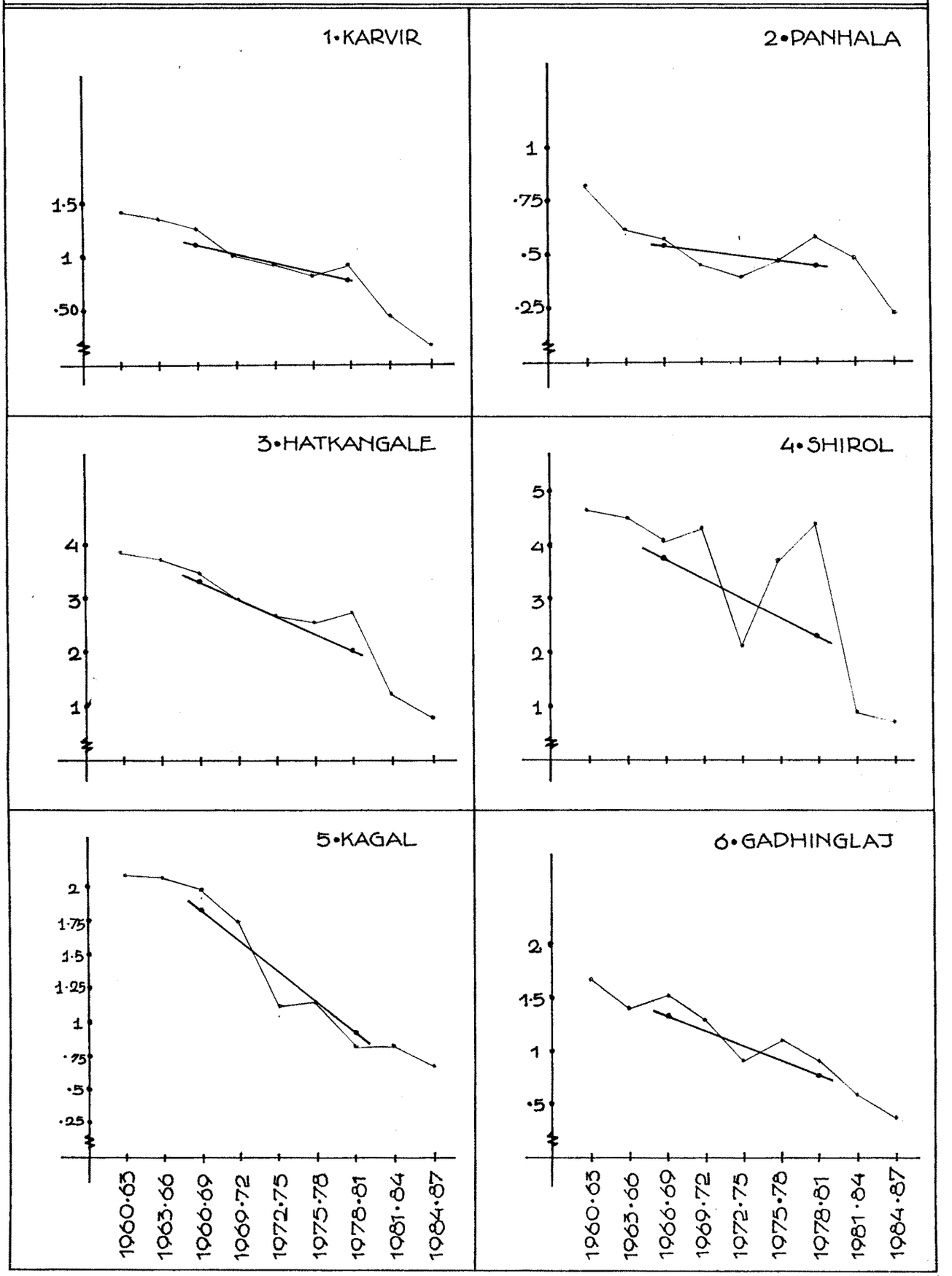
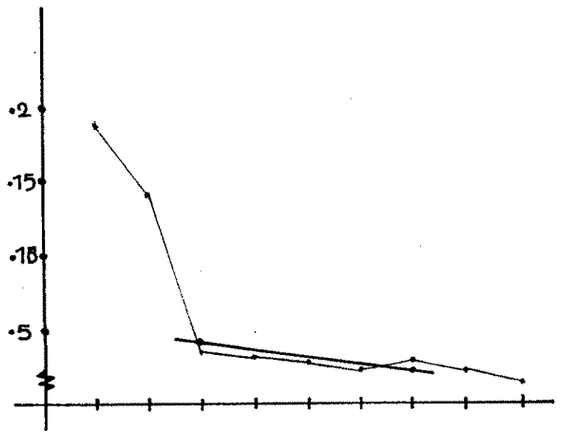
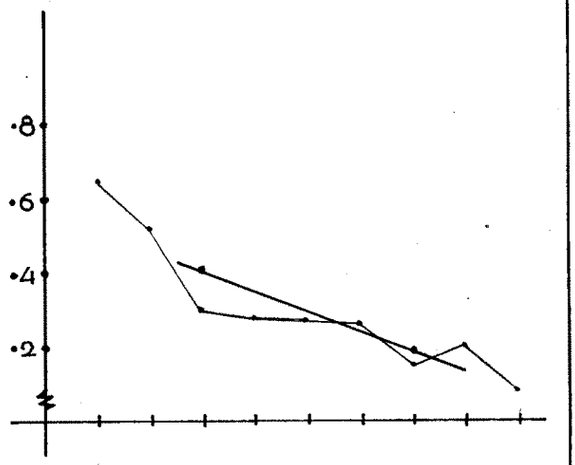


CHART •10 (CONTINUED)

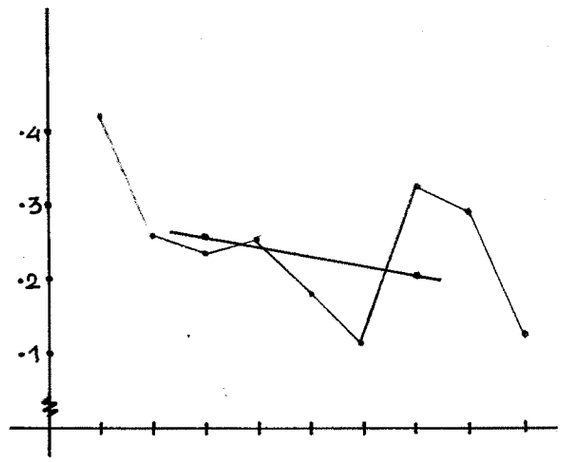
7• CHANDGAD



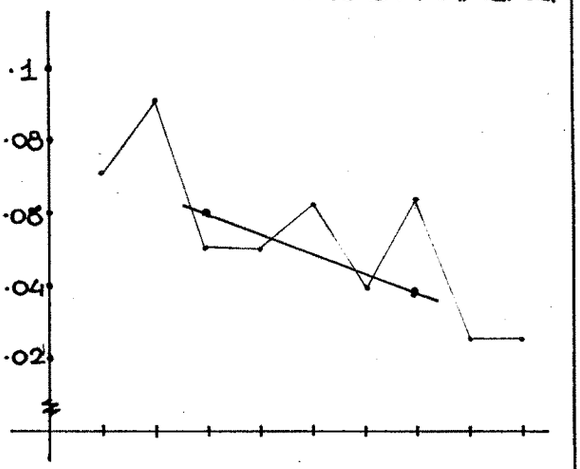
8•AJARA



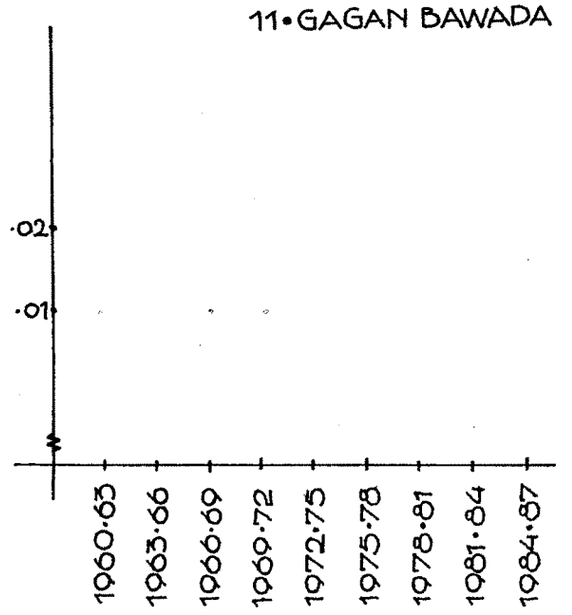
9•BHUDARGAD



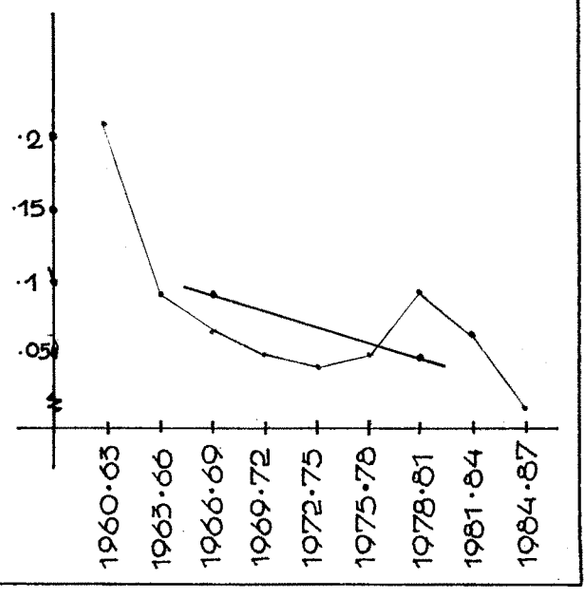
10•RADHANAGARI



11•GAGAN BAWADA



12•SHAHUWADI



from its share in district area of tur as also in the GCA of the taluka.

For considering the magnitude of the range between the minima and maxima, here also attention would be given to the five important talukas, viz. - Hatkanagale, Shirol, Gadhinglaj, Kagal and Karvir. The range magnitude was quite low, which indicated movements of the percentage area within narrow limits. Actually, when it comes to the minimum and maximum percentage shares, barring casual exceptions, for all the talukas they represented the percentage figures for 1960-63 and 1984-87 trienniums respectively.

4.5.2.2 Trends :

The behaviour of changes in percentage area to the GCA of the taluka from triennium to triennium for the entire period could be known by fitting a trend line for the Zigzag curves of the talukas. Chart 10 is an exhibit of the trend lines. It reveals almost uniformity in case of all the talukas. With reference to the GCA of the talukas, in every taluka tur area registered a single taluka showed an uptrend. With all the talukas the downtrend was sharp. This, by itself, confirms once again that tur cultivation within Kolhapur district had lost all its attraction for the cultivators.

4.5.2.3 Coefficient of Variation :

On knowing the tendency of change during the period of 27 years, it is now convenient to gauge the degree of fluctuations in the percentage area with reference to the GCA of each taluka. For the purpose, talukawise coefficient of variation are calculated and presented in Table 4.11.

Table 4.11

C.V. values of taluka shares of tur in their GCA

Taluka	Coefficient of variation (percentage)
1. Bhudargad	20.83
2. Gadhinglaj	38.31
3. Hatkanagale	38.37
4. Radhanagari	40.00
5. Kagal	40.74
6. Karvir	42.04
7. Shirol	49.36
8. Ajara	50.00
9. Shahuwadi	71.42
10. Chandgad	85.88
11. Panhala	100.00
12. Gagan Bawada	-

The coefficient values were high for all the talukas of the district indicating thereby high degree of variations in the taluka. The lowest percentage variation (20.83 per cent) observed with Bhudargad was basically high. Hatkanagale taluka, the topmost user of its GCA, also revealed quite high percentage (38.37 per cent) of fluctuations in the area under tur. Gagan Bawada was not a producer of tur (the area being hardly a couple of hectares), nil variations are shown. Thus, taluka area of tur as percentage of its GCA showed high degree of variations and thereby instability of cultivation. This was reflected in the overall district picture so that the coefficient of variation for the district as a whole was 40.38 per eent.

4.6 DISTRICT AREA OF GRAM : TRIENNIAL BEHAVIOUR :

Column 3 of Table 4.12 gives the triennium average figures of the district area under gram. As is mentioned earlier, gram assumed importance in pulses cultivation next to tur, though its share was less than the latter for some time. Observations

of the triennium figures of gram reveals periodical ups and downs of considerably larger magniture in the use of land for gram cultivation. In 1960-63, the area used was 3,119 hectares. It declined all through the nineteen sixties, and by the middle of the seventies it fell to the triennium average of only 590 hectares. Strikingly, the next triennium (1975-78) gave a tremendous boost to gram area and pushed up the area to a height of 4,461 hectares. The following triennium (1978-81) provided a further fillip to this crop and lifted the district area to an unprecedented hight of 7,800 hectares. This was the best period in the 27 year span of gram cultivation in Kolhapur district. But, unfortunately this height could not be maintained for long. In the very next triennium, the area slashed to 4,140 hectares. Even this level was not maintained thereafter. Of significance, the triennium of 1984-87, brought almost a collapse of gram cultivation in the district; the triennium average was only 952 hectares. Thus, from a sizeable area, the gram cultivation in Kolhapur district was reduced to a situation of sparse cultivation.

If the absolute district area is viewed against the GCA of the district, the figures in the lower parentheses reveal that till the mid-seventies, the proportion of gram area was below 1 per cent and also declining. It declined from 0.69 per cent during 1960-63 to 0.14 in 1972-75. The sudden upsurge during next 6 years lifted the share to 1.03 percent initially and then to 1.77 per cent. In 1984-87, it dipped to a meagre 0.21 per cent. The time-series average was 0.64 per cent. However, overall tendency was that of a rising trend.

4.7 TALUKA PROFILE OF GRAM :

Talukawise break-up of the area under gram is given in columns 4 to 15 of Table 4.12. These absolute figures will now be studies with reference to firstly the district area and secondly the GCA of the respective talukas. The parameters for both the dimensions are : (i) average area, (ii) trends of taluka figures and (iii) coefficient of variation. Analysis follows.

4.7.1 TALUKA AREA VIS-A-VIS DISTRICT AREA OF GRAM :

In Table 4.12, columns 4 to 15 indicate at the outset area of gram in the taluka and thereafter in the upper parentheses percentage of this area to the district total. These details will now be used to examine the behaviour of gram area in Kolhapur district.

4.7.1.1 Average area :

A summary account of the talukawise area as percentage of the district total through the span of 27 years is presented in Table 4.13

Table 4.13

Talukawise range of share of area under gram (1960-87)

(Percentages)

Taluka	Range of share	Range magnitude (percentage points)	Average share for the entire period
1. Karvir	1.36 to 11.47	10.11	6.95
2. Panhala	3.15 to 15.89	12.74	8.39
3. Hatkanagale	10.31 to 40.42	30.11	19.23
4. Shirol	18.24 to 55.36	37.12	33.73
5. Kagal	3.36 to 7.69	4.33	5.34
6. Gadhinglaj	4.49 to 13.50	9.01	8.51
7. Chandgad	0.08 to 0.73	0.65	0.35
8. Ajara	0.16 to 9.19	9.03	3.15
9. Bhudargad	0.54 to 3.60	3.06	1.96
10. Radhanagari	0.77 to 7.88	7.11	2.76
11. Gagan Bawada	0.77 to 7.88	7.11	2.76
12. Shahuwadi	0.89 to 18.38	17.49	10.00

Similar to tur, in case of gram also, production area was concentrated in the talukas of plains in the eastern region of the district. The foremost taluka was Shirol commanding nearly one-third of the district area. Hatkanagale was the second best sharing an average of

one-fifth of the district area. Among the hilly talukas, worth noting were Shahuwadi and Panhala. Gagan Bawada did not at all produce gram while Chandgad, Ajara, Bhudargad and Radhanagari talukas had negligible share to their credit.

As regards the range of shares, the magnitude of variation was phenomenally large in case of Shirol and Hatkanagale. Shahuwadi, Panhala and Karvir were at relatively lower level but with wider magnitude. Such a large range in most of the cases was due to a sudden collapse of the area during a particular triennium. Such a tendency, therefore had let to intense variation in area from one triennium to another.

4.7.1.2 Trends :

Actual behaviour of the area through the ups and downs can be traced by fitting a trend line for each taluka. The trend line unearths the underlying tendency in the changes of area occurring from season to season. Graphical presentations appear in Chart 11. Gagan Bawada did not at all grow gram. Of the remaining talukas Karvir, Hatkanagale, Ajara, Bhudargad and Radhanagari talukas had overall rising trend line. Among these talukas the uptrend was marginal with Karvir and Bhudargad and much sharper with Hatkanagale, Ajara and Radhanagari. On the other side, overall falling trend line could be observed in case of Panhala, Shirol, Kagal, Gadhinglaj, Chandgad and Shahuwadi. The downtrend of Kagal was marginal and of Gadhinglaj and Chandgad was sharp. The cumulative effect of this kind of division of talukas into two groups, one group with uptrend and the other downtrend, was rising trend for the district as a whole. It was because of improvement of area after mid-seventies. Further, the group of talukas with uptrend had overweighed the group of talukas with downtrend.

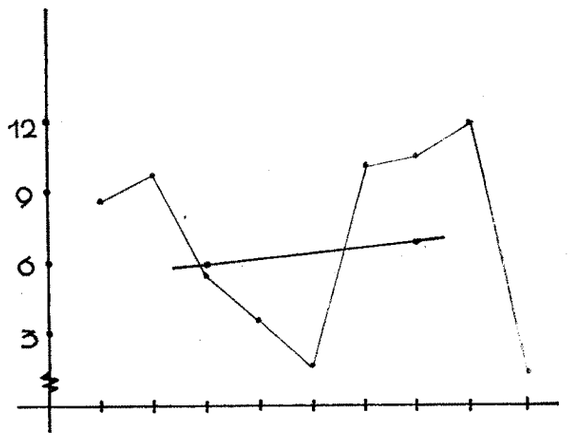
4.7.1.3 Coefficient of variation :

The degree of variation from triennium to triennium over the entire span of 27 years could be studied with the help of the values of coefficient of variation as shown in

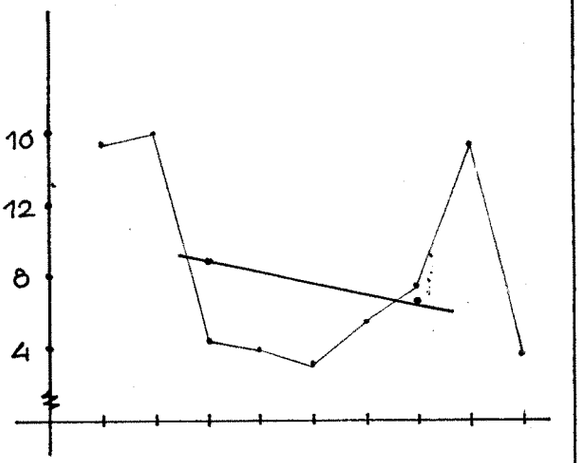
■ CHART•11

TREND OF TALUKA AREA OF GRAM
VIS-A-VIS DISTRICT AREA

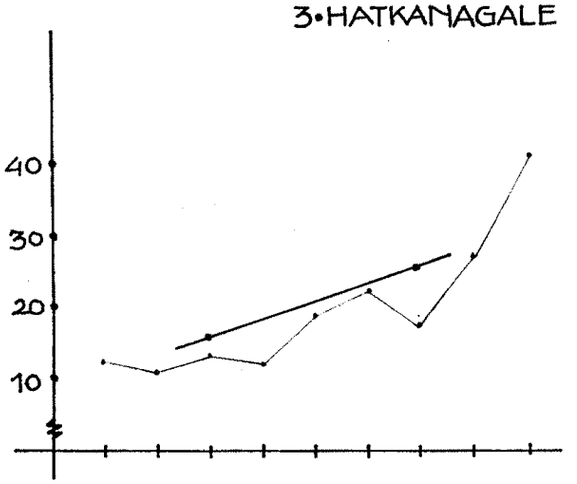
1•KARVIR



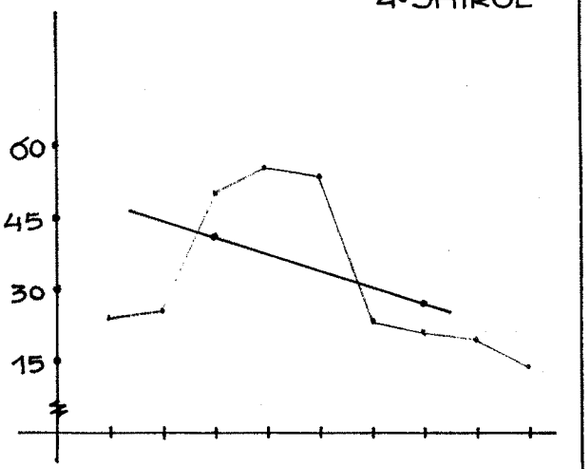
2•PANHALA



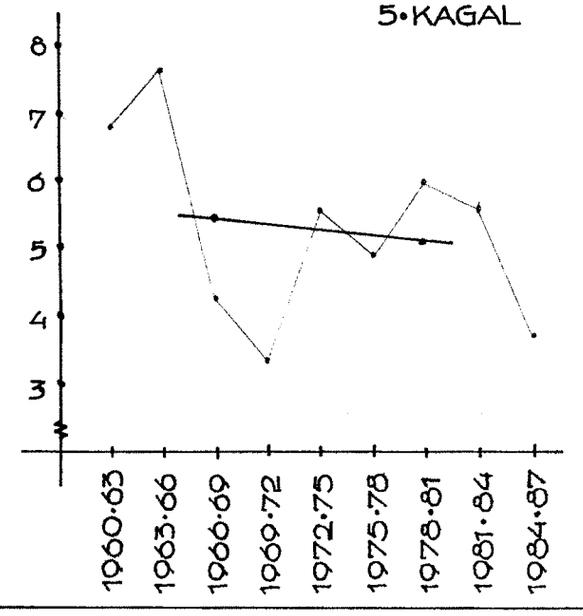
3•HATKANAGALE



4•SHIROL



5•KAGAL



6•GADHINGLAJ

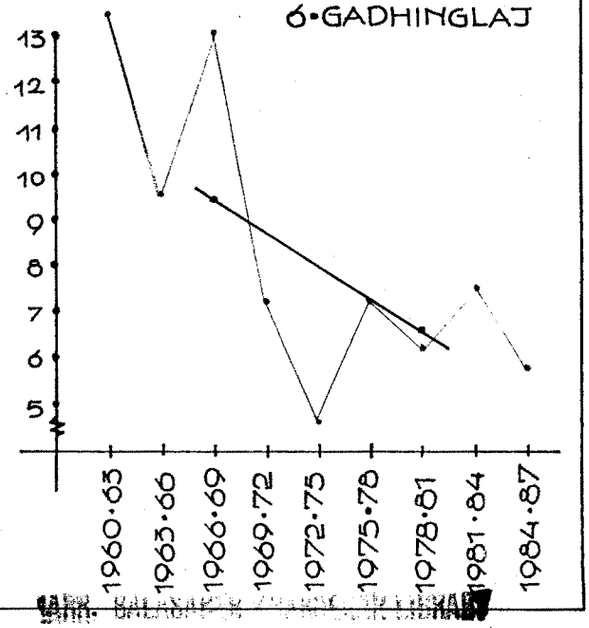
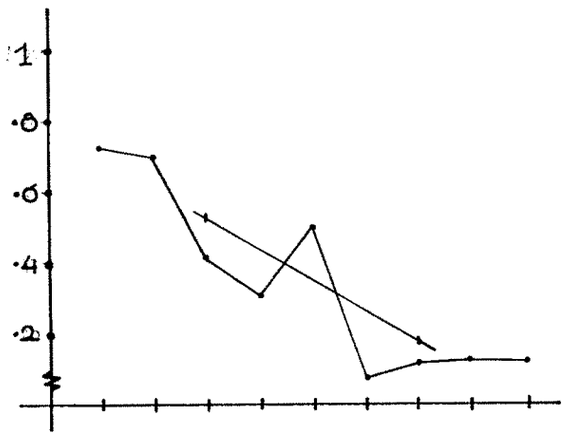
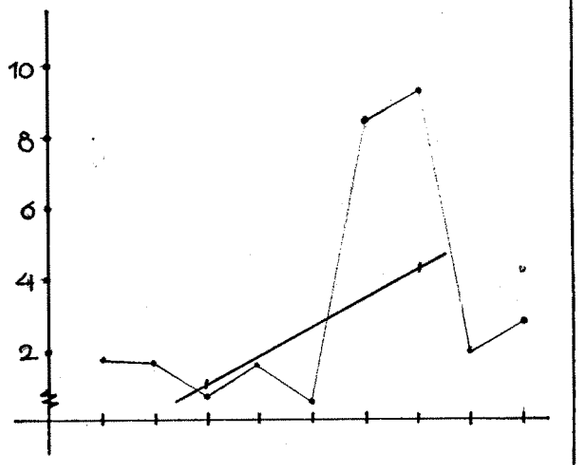


CHART •11 (CONTINUED)

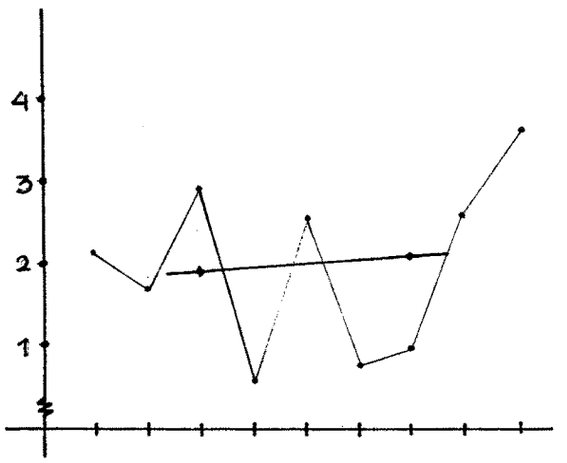
7•CHANDGAD



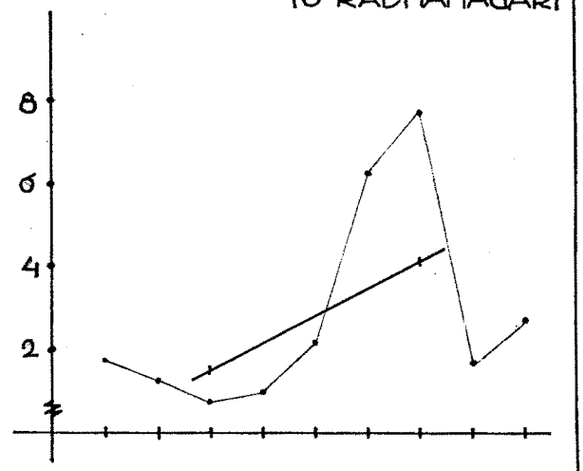
8•AJARA



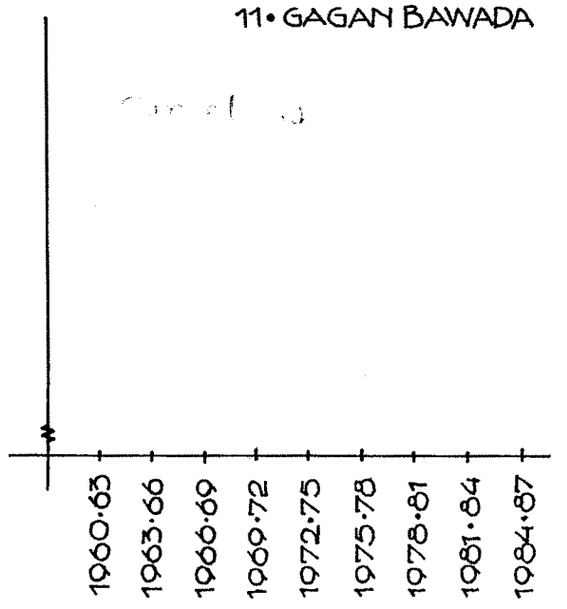
9•BHUDARGAD



10-RADHANAGARI



11• GAGAN BAWADA



12•SHAHUWADI

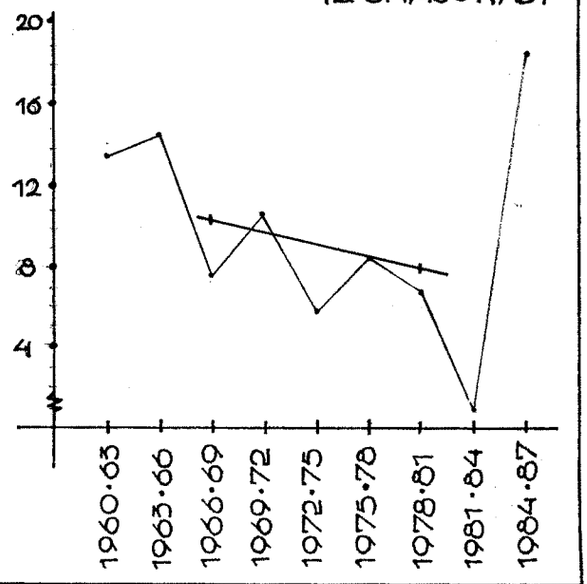


Table 4.14

Table 4.14

C.V. values of taluka shares of gram in their GCA

Taluka	Coefficient of variation (percentage)
1. Kagal	25.28
2. Gadhinglaj	35.04
3. Shirol	41.15
4. Hatkanagale	47.42
5. Shahuwadi	50.00
6. Bhudargad	51.53
7. Karvir	53.09
8. Panhala	62.93
9. Chandgad	68.57
10. Radhanagari	85.86
11. Ajara	96.19
12. Gagan Bawada	-

The talukawise percentages of area under gram in the district total appear to have varied quite unevenly as the coefficient values of all the talukas were quite high. The lowest value was 25.28 per cent (Kagal) and the highest 96.19 per cent (Ajara). Coefficient values of the remaining talukas, ranged in-between these extreme values. Therefore, farmers' decision of sparing land for gram was following pendulum-like attitude showing thereby substantial changes annually. This must be because these talukas devoted relatively very small area of the district total for gram cultivation. Even the top-ranking Shirol with conspicuous share also was no exception to this kind of behaviour.

4.722 TALUKA AREA OF GRAM VIS-A-VIS GCA OF TALUKA

Now the taluka area will be justaposed with the GCA of the taluka; the taluka area will be considered in terms of its percentage to the GCA. Figures in lower parentheses in columns 4 to 15 of Table 4.12 show these percentages. These

figures would be examined with reference to the average area, trend of the time-series and coefficient of variation.

4.7.2.1 Average area :

Time-series average area of each taluka and the range in which percentages of the area to the GCA varied are given in Table 4.15.

Table 4.15

Talukawise range of area under gram as percentage of the GCA (1960-87).

(Percentages)

Taluka	Range of share	Range of magnitude (percentage points)	Average share for the entire period
1. Karvir	0.02 to 1.59	1.57	0.51
2. Panhala	0.07 to 1.86	1.79	0.80
3. Hatkanagale	0.25 to 3.02	2.77	1.09
4. Shirol	0.78 to 4.49	4.71	1.90
5. Kagal	0.07 to 1.08	1.01	0.36
6. Gadhinglaj	0.06 to 1.12	1.06	0.57
7. Chandgad	0 to 0.05	0.05	0.01
8. Ajara	0. to 2.41	2.41	0.48
9. Bhudargad	0.02 to 0.27	0.25	0.16
10. Radhanagari	0 to 1.93	1.93	0.38
11. Gagan Bawada	-	-	-
12. Shahuwadi	0.07 to 1.36	1.29	0.72

It appears from Table 4.15 that no taluka had any sizeable area of its cultivable land used for gram cultivation as could be seen from the column of average shares for the entire taluka. Only Shirol and Hatkanagale talukas devoted between 1 and 2 per cent of their GCA for gram cultivation over the period of 27 years. Gagan Bawada did not at all cultivate gram. Rest of the talukas spared less than one per cent of its GCA for this purpose. Therefore, cultivation of gram appeared to be the least favoured activity for the farmers of Kolhapur district.

Perhaps for this very reason the range within which percentage area moved remained narrow. Shirol and Hatkanagale moved within a range of 4.71 and 2.17 percentage points respectively while all other talukas had a range between 1 and 2 percentage points. Importantly, for all the talukas growing gram, the minimum percentage was for the triennium 1972-75 and the maximum was for the triennium 1978-81. The former was mainly due to servere drought conditions in 1972-73 and the latter was due to favourable climatic conditions in the district.

4.7.2.2 Trends :

Though the previous section brought home the fact that the percentage area of gram moved within narrow limits, it would be more enlightening if the actual underlying tendency of change from one period to another is noticed. The fluctuations, therefore, are smoothened by fitting trend lines. They are exhibited in Chart 12. The graphical presentations bring out that of the 11 talukas growing gram, only three talukas - Chandgad, Bhudargad and Shahuwadi - sustained declining trend, which was only marginal with the latter two talukas. Remaining 8 talukas revealed rising trend. This feature must have contributed in making the overall trend for the district also rising. Therefore, in spite of the fact that very negligible proportion of the GCA of the taluka was generally devoted for gram cultivation in the talukas, the post - 1975 years marked a little increasing attention to this crop. The general behaviour was falling percentage between 1960-75 and then rising percentage between 1975-89. As the latter phenomenon was more intense than the former, most of the talukas had an overall uptrend.

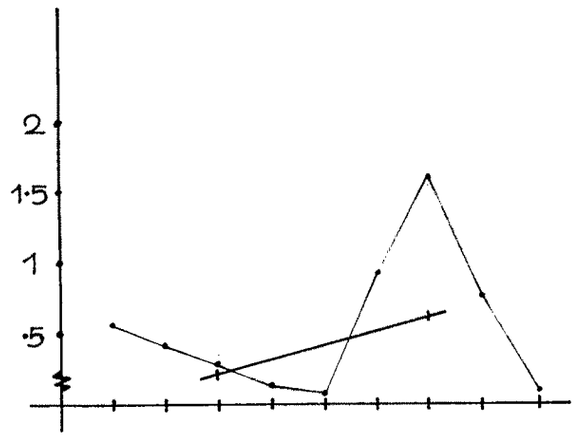
4.7.2.3 Coefficient of variation :

The narrow range of variation of the area as specified in Table 4.15 was an apparent exhibit. The degree of variation is rather a better index of judging

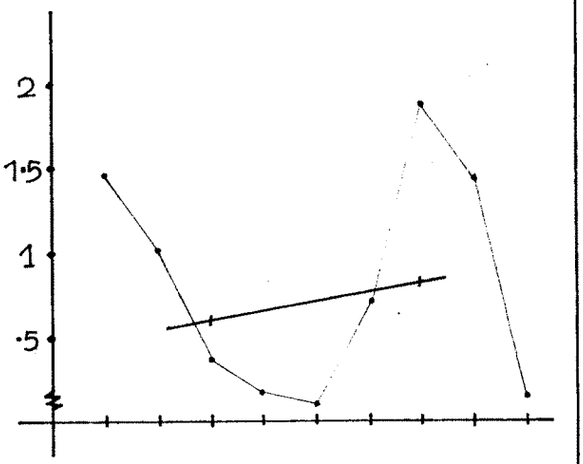
CHART·12

TREND OF TALUKA AREA OF GRAM AS PERCENTAGE OF ITS GCA

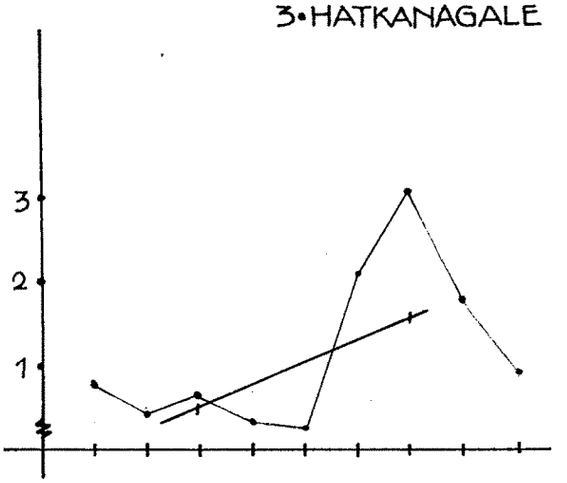
1·KARVIR



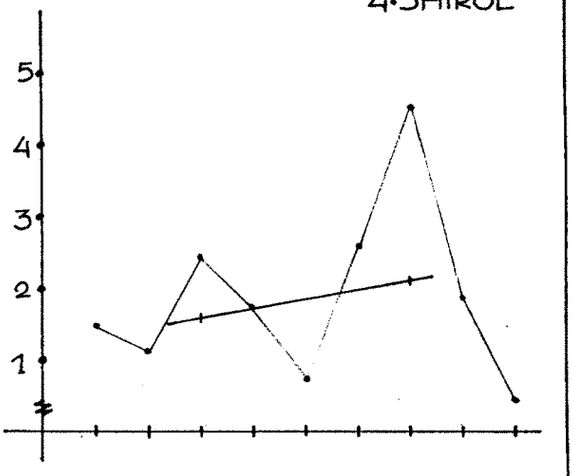
2·PANHALA



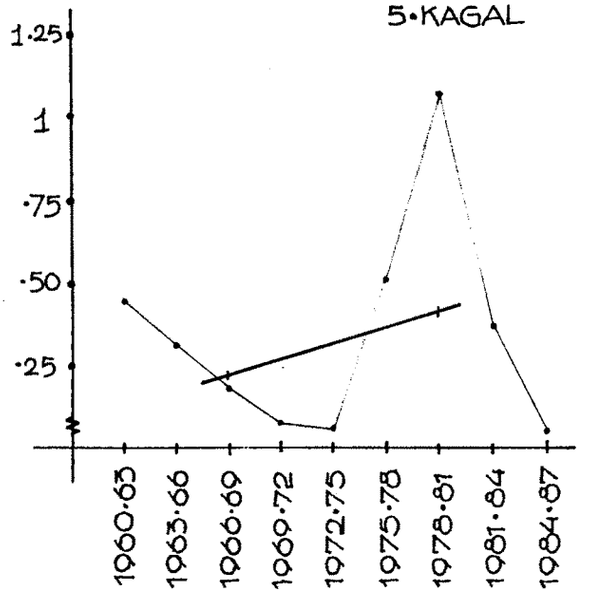
3·HATKANAGALE



4·SHIROL



5·KAGAL



6·GADHINGLAJ

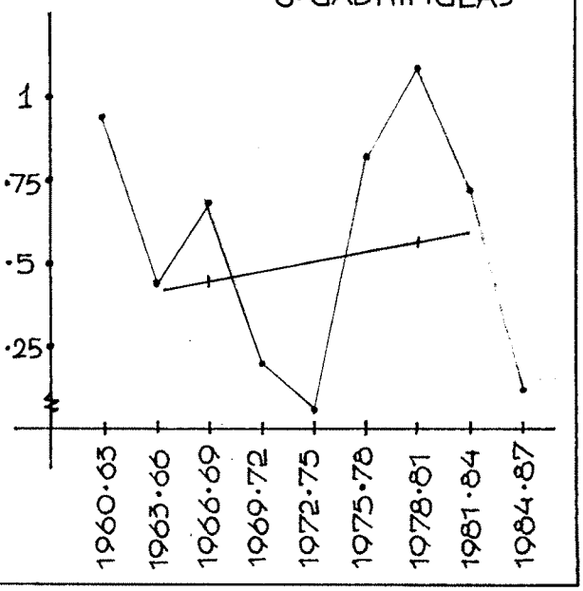
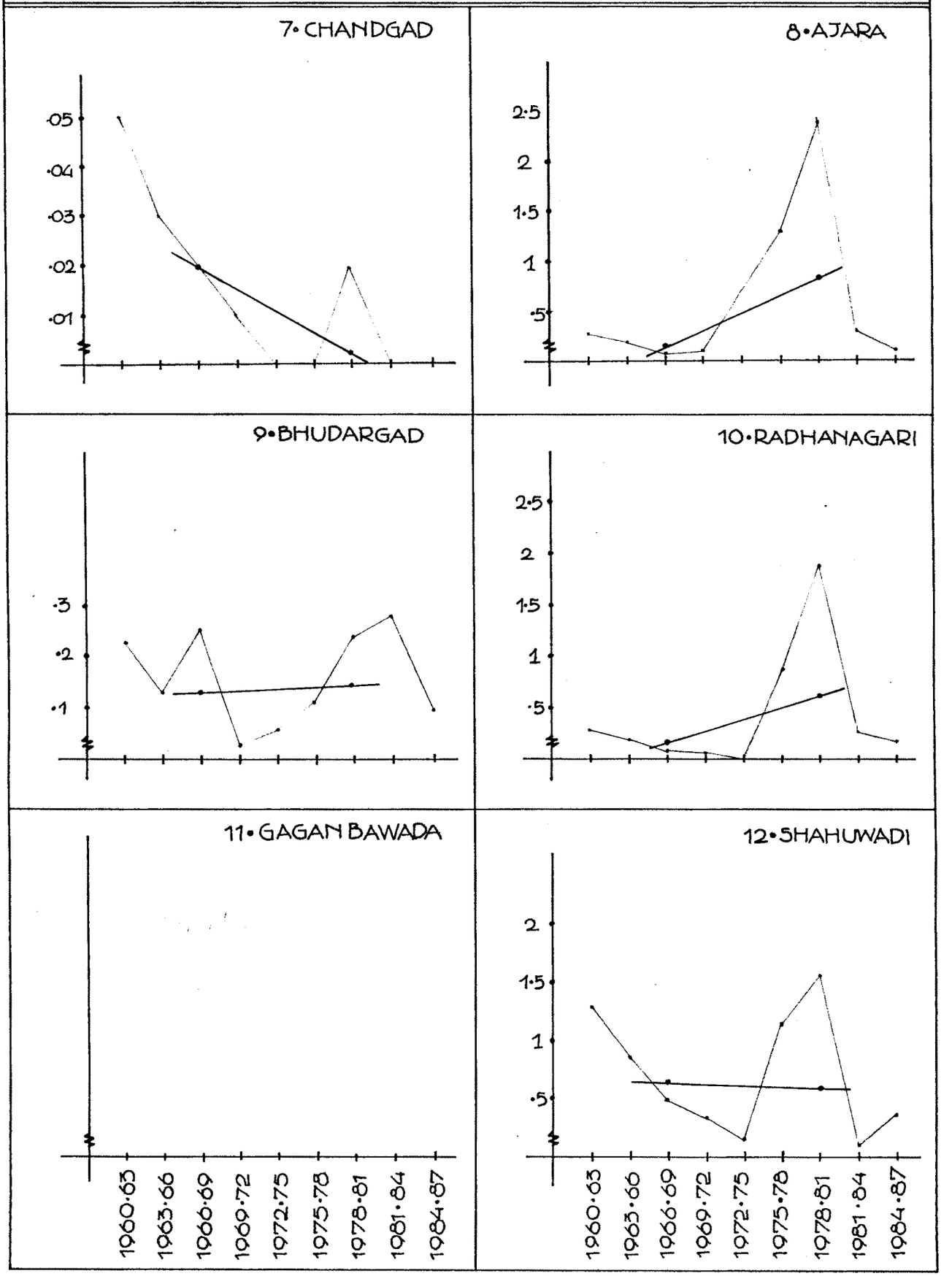


CHART •12 [CONTINUED]



the extent of stability or instability of the area. It is depicted by means of coefficient of variation, the values of which are given in Table 4.16

Table 4.16

C.V. values of taluka shares of gram in their GCA

Taluka	Coefficient of variation (Percentage)
1. Bhudargad	50.00
2. Gadhinglaj	59.64
3. Shirol	59.43
4. Shahuwadi	70.42
5. Panhala	80.00
6. Kagal	80.55
7. Hatkanagale	81.65
8. Karvir	94.11
9. Chandgad	100.00
10. Ajara	143.75
11. Radhanagari	164.86
12. Gagan Bawada	-

The underlying behaviour as depicted by the values of the taluka coefficients is striking because of quite high values. The lowest value was 50.00 per cent for Bhudargad. Gadhinglaj and Shirol, the two important, gram producing talukas gave the coefficient 60 per cent. Chandgad, Ajara and Radhanagari utilised very small chunk of its GCA, but there too they showed phenomenally high degree of fluctuations from triennium to triennium. Radhanagari had the highest value (164.86 per cent). In short, gram cultivation in Kolhapur district was subject to considerable fluctuationsannually.

4.8 CONCLUSIONS :

All the previous pages of this chapter vividly bring forth the fact that use of land for growing pulses was not conspicuous. Western hilly talukas of the district were agro-climatically not suitable for cultivation of rabi crops

like pulses. Eastern talukas, on the other hand, are situated in the plains and have better sources of irrigation for taking pulses crops during rabi season. Shirol and Hatkanagale talukas have beteer endowment in this respect and, therefore, they have come out as principal talukas growing these crops in the district.

When it comes to the taluka area of the tur and gram crops in the GCA of the taluka, the picture is dim. Shirol had the best of situation in tur but not in gram production. Other talukas sparsely cultivated these pulses, and therefore, pulses cannot be considered as an important crop of the district.

Notwithstanding the low percentage of area devoted to pulses, by and large, the trends of the application of land for these crops were rising for pulses in general and tur and gram in particulars All the same, by 1984-87, there was substantiall fall in the area under both the pulses. Though, the present study has not referred specially to moong, the data in the source books reveals that in recent years, the farmer of the district have favoured moong to the two traditional crops - tur and gram. Since this has been a recent phenomenon, the time-series analysis of this crop has not been done here, However, this change in the cropping pattern within the sub-group of pulses cannot be lost sight of.

Finally, much less area devoted to pulses cultivation in the individual talukas, has made the production decision volatile and hence unstable. Values of the coefficients of variation on b both the fronts (district area and GCA) remained pretty high degree of annual variations in the area utilised for these crops. The degree of variability was more for gram than tur. The possible reason may be that tur is grown as a mixed crop alongwith jowar while gram is grown independently.