To Analyses of Trend, Change and Fluctuation in Area, Production & Productivity of Coriander Production in Different Districts of Chhattisgarh

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ABSTRACT

Coriander is first largest grown spice in the country during 2020-21 India accounting for 64.41 % (1430 thousand metric tones). The absolute change in area of coriander grown in Mahasamund district was found to be maximum (1.07 thousand hectare) and overall Chhattisgarh state have found 8.12 thousand hectare.Korba district was the highest relative change in area of coriander grown 398.92 % and overall Chhattisgarh state have 130.11%.Mahasamund district had the greatest absolute change and relative change in coriander production (10.47 thousand tonne and 44875.72% respectively), Chhattisgarh state was found to be 46.66 thousand tonne and 314.27% respectively.In Mahasamund district, the absolute and relative change in coriander productivity was found to be the greatest (8.72 thousand tonne and 3128.38%),Chhattisgarh state was found 1.47 thousand tonne and 57.53%.The area and production was found to be minimum and more stable in Surguja district (17.80% and 41.48%) and overall Chhattisgarh state have found 37.36% and 57.12% respectively.The productivity was found to be minimum and more stable in Raighar district (25.46%) and more variable in Mahasamund (82.22%).Variability in productivity of overall Chhattisgarh state have werefound to be 25.83%.Simple growth rate in area, production and productivity of coriander was found to be maximum in Mahasamund district (14.92%, 21.12%,14.70%) and overall Chhattisgarh state have found 5.50%, 8.51%, 3.56%. respectively. Trend in area of all coriander grown districts had shown positive and highly significant exceptRaigharh district. For the production of all coriander gown districts had show positive and highly significant exceptRajnandgaon district.

Keywords: Absolute change, relative change, productivity, stable, variability,

1.0 INTRODUCTION

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With India's significant success in the food sector, academics are now focusing on improving the quality of produce. India is the world's leading producer, consumer, and exporter of spices, earning its known as "Spice Basket" or "Land of Spices."India is known as a spice country because of its major position in global spice production. Indian spices are famous for their flavour all over the world. According to the FAO's world spices statistics (2019-20), India contributed 73 percent of all spices worldwide. In the worldwide spice market, India has a market share of around 37% in terms of quantity and 27% in terms of value. India grows 63 of the 109 spices specified by the international standard organization. In 2020-21, the area under coriander in Madhya Pradesh was 292.74 thousand hectares (27.25%), with a production of 424.71 thousand tonnes (29.70%).In India, Chhattisgarh ranks 4th in4th in coriander production.The total area under coriander in 2004-05 was5.066 thousand hectares, with a production of 16.852 thousand tonnes, while in 2020-21, the area under coriander will be 14.998 thousand hectares, with a production of 66.300 thousand tonnes.Mahasamund,

Raipur, Bemetara, Dhamtari, Durg, Surgura, Korba and Raigharh are the primary coriander-growing districts in Chhattisgarh.

There are 28 districts in Chhattisgarh, but only 8 will be selected because they account for 59.63 per cent of area and 83.60 per cent of total production. Productivity is greatest (4422.95 kg/hectare) among all coriander-producing states in the India.Keeping the above facts in mind, the present study ―Dynamics of coriander production in different districts of Chhattisgarhwas carried out with following objective to:

~~To~~ Analyse change and ~~fluctuation in~~fluctuation in area, production and productivity of coriander in different districts of Chhattisgarh.

~~To analyse~~Analyse the trend and growth rate in the area, production and productivity of coriander.

Comments: the 2 objectives can be merged or reframed.

2.0 MATERIAL AND METHODS

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1.1 Profile of study area

Chhattisgarh state from India was considered purposely for this study, focusing on.~~The study area is confined to all~~ the major coriander producing districts i.e. Mahasamund, Raipur, Dhamtari, Durg, Surgura, Korba, Koria, Raighar and Other districts of Chhattisgarh. Out of 28 districts only 8 district had selected for the study because this districts accounts for 83.61 per cent of total production.(Table 1.1).

Table 1.1: Area, Production and Yield Contribution of Coriander in different Districts of Chhattisgarh State

Districts	Area (hectare)	Production (tones)	Yield (tonne/ha)
Raipur	510.00 (3.40)	2897.00 (4.37)	5.68
Mahasamund	1655.00 (11.04)	18205.00 (27.46)	11.00
Dhamtari	1036.00 (6.91)	5260.00 (7.93)	5.08
Durg	392.00 (2.62)	392.00 (0.59)	1.00
Surguja	1225.00 (8.17)	5864.00 (8.84)	4.79
Korba	821.00 (5.48)	9728.00 (14.67)	11.85
Raigarh	2738.00 (18.27)	10780.00 (16.26)	3.94
Rajnandgaon	562.00 (3.75)	2304.00 (3.48)	4.10
Total selected	8939.00 (59.64)	55430.00 (83.61)	6.20
Others	6049.00 (40.36)	10869.00 (16.39)	1.80
Chhattisgarh	14988.00 (100.00)	66299.00(100.00)	4.42

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Source: Directorate of Horticulture and Farm Forestry, https://agriportal.cg.nic.in.(Figure in parenthesis denotes percent to total)

1.2 Selection of Crop

The Coriander crop was selected for the Present study in the all Coriander producing districts of Chhattisgarh state. ~~Because out~~Out of all the spices, coriander covers the maximum area (22.12%) in Chhattisgarh.

Table 1.2 : Area, Production and Per Cent Contribution of all Spices inChhattisgarh State

(Year: 2020-21)

Spices	Area(thousand hectare)	Production(thousand Tonne)
Coriander	14.98 (22.12)	66.29(14.75)
Turmeric	12.07 (17.81)	106.43 (23.68)
Red chilly	10.34 (15.27)	66.92 (14.89)
Ginger	10.11 (14.93)	102.83 (22.88)
Garlic	4.41 (6.51)	26.18 (5.82)
Fenugreek	2.58 (3.81)	16.24 (3.61)
Carom/Ajwain	0.17 (0.26)	0.15 (0.03)
Other	13.05 (19.26)	64.29 (14.30)
Total	67.75 (100)	449.35 (100)

Source: Director of Horticulture and Farm Forestry,https://agriportal.cg.nic.in. (Figure in parenthesis denotes percent to total)

1.3 Period of Study

The data is collected for the period 17 year from 2004-2005 to 2020-21.

Base year- Triennium average (starting 2004-05 to 2006-2007)

Current Year- Triennium average (ending 2018-19 to 2020-21)

? Analytical tools

1.4 Absolute and relative change

1.4.1Absolute change

Equation 1 the original source of Equation 1 (where it was first used).

Absolute change = Yn – Yo

Absolute change = Current Year - Base Year

Relative change

Equation 2

$$\text{Relative change (\%)} = \frac{Yn - Yo}{Yo} \times 100$$

$$\text{Relative change (\%)} = \frac{\text{Current year} - \text{Base year}}{\text{Base year}} \times 100$$

Where:

Base year (Yo) = Triennium average (starting 2004-05 to 2006-07) ofArea, Production, Productivity of Coriander.

Current year (Yn) = Triennium average (ending 2018-19 to 2020-21) of Area, Production, Productivity of Coriander.

Comments: use Microsoftword Equation editor, the equations dose not follow standard.

1.5 Measure of fluctuation using which software?

$$\text{Coefficient of variation (CV \%)} = \frac{S.D}{Mean} \times 100$$

Where,

$\bar{X} = \frac{\Sigma x}{n}$,

$S.D = \sqrt{v}$

1.6 Trend

Equation 3

Linear trend, $Y = a + bx$

Where

Y= dependent variables (Area, Production and Yield)

a = intercept

b = Regression co-efficient

x = period

N=sample size

1.7 Simple Growth Rate (SGR):

$$SGR\ (\%) = \frac{b}{\bar{y}} \times 100$$

Where,

b = Regression coefficient,

$\bar{y}$= Average of Area/Production/yield

1.8 Student t test

$$t = b / SE(b)$$

Where,

t = test statistics

b = Regression coefficient

SE(b) = Standard error of 'b'

t calculated>t tabulated (significant)

t calculated<t tabulated (Non-significant)

comments: the software used is missing and equations should be referred to as Equation 1 or 2 or 3

3.0 RESULTS AND DISCUSSION

This section presents the ~~To~~ analyses of change and fluctuation in area, production and productivity of coriander in different districts of Chhattisgarh.

2.1Area

To estimate the variation in coriander area over the time, the absolute change, relative change and coefficient of variation are calculated in ~~table~~ Table 1.3. The area of coriander in Chhattisgarh was found to be increasing by 130 per cent (8.12 thousand hectare) from 6.24 thousand hectare (in base year) to current year in Chhattisgarh, with a fluctuation of 37.36 per cent during the period under study, the area of coriander in Mahasamund district increased by 1337.50 per cent (1.07 thousand hectare) from 0.08 thousand hectare (base year) to 1.15 thousand hectare (current year) with a 94.11 per cent fluctuation,followed by area of coriander in different district of Chhattisgarh was found to be Raipur district increased by 384.61 per cent (1.00 thousand

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hectare) from 0.26 thousand hectare (base year) to 1.27 thousand hectare (current year)with a 81.30 per cent fluctuation, Korba district increased 398.92 per cent (0.62 thousand hectare) from 0.12 thousand hectare (base year) to 0.49 thousand hectare (current year) with a 51.92 per cent fluctuation, Durg district increased by 13.01 per cent (0.11 thousand hectare) from 0.88 thousand hectare (base year) to 0.99 thousand hectare (current year) with a 40.45 per cent fluctuation , Dhamtari district increased by 206.53 per cent (0.70 thousand hectare) from 0.34 thousand hectare (base year) to 1.03 thousand hectare (current year) with a 40.05per cent fluctuation, Raigharh district increased by 18.52 per cent (0.30 thousand hectare) from 1.60 thousand hectare (base year) to 1.90 thousand hectare (current year) with a 31.62 per cent fluctuation, Rajnandgaon district increased by 182.54 per cent (0.36 thousand hectare) from 0.20 thousand hectare (base year) to 0.56 thousand hectare (current year) with a 31.10 per cent fluctuation, lowest fluctuation in Surguja district increased by 54.59 per cent (0.40 thousand hectare) from 0.73 thousand hectare (base year) to 1.13 thousand hectare (current year) with a 17.80 per cent fluctuation and total selected district increased by 105.06 per cent (4.43 thousand hectare) from 4.21 thousand hectare (base year) to 8.64 thousand hectare (current year) with a 38.08 per cent fluctuation and other remaining districts increased by 182.08 per cent (3.70 thousand hectare) from 2.03 thousand hectare (base year) to 5.73 thousand hectare (current year) with a 37.89 per cent fluctuation.

Table 1.3 : Change and Fluctuation in area of coriander in different districts of Chhattisgarh

Districts	Area (000'Ha)					
	Base year (000' ha.)	Current year(000' ha.)	Absolute change(000 'ha.)	Relative change(%)	S.D	Coeff. of Variation %
Raipur	0.26	1.27	1.00	384.61	0.98	81.30
Mahasamund	0.08	1.15	1.07	1337.50	0.59	94.11
Dhamtari	0.34	1.03	0.70	206.53	0.29	40.05
Durg	0.88	0.99	0.11	13.01	0.59	40.45
Surguja	0.73	1.13	0.40	54.59	0.18	17.80
Korba	0.12	0.62	0.49	398.92	0.28	51.92
Raigarh	1.60	1.90	0.30	18.52	0.66	31.62
Rajnandgaon	0.20	0.56	0.36	182.54	0.14	31.10
Total selected	4.21	8.64	4.43	105.06	3.10	38.08
Others	2.03	5.73	3.70	182.08	1.74	37.89
CG	6.24	14.37	8.12	130.11	4.75	37.36

Thus, The absolute change in area coriander grown in Mahasamund district was found to be maximum (1.07 thousand hectare) followed by Raipur (1.00 thousand hectare), Dhamtari (0.70 thousand hectare), Korba (0.49 thousand hectare), surguja (0.40 thousand hectare),

Rajnandgaon(0.36 thousand hectare), Raighar (0.30 thousand hectare) and Durg (1.00 thousand hectare). Absolute change in area of remaining districts of Chhattisgarh was (3.43 thousand hectare) and overall Chhattisgarh state have found 8.12 thousand hectare.

Korba district had the highest relative change in area of coriander grown (398.92 percent), followed by Raipur (384.615 percent), Dhamtari (206.53 percent), Rajnandgaon (182.54 percent), Mahasamund (1337.50 percent), Surguja (54 percent) and Raighar (18.52 percent). Relative change of other remaining districts of Chhattisgarh (182.08 percent), and overall Chhattisgarh state have (130.11 per cent).

2.2 Extent of variability in area of coriander in different districts of Chhattisgarh

The area was estimated to be minimum and more stable in Surguja district (17.80%), followed by Rajnandgaon (31.10%), Raighar (31.62%), Dhamtari (40.05%), Durg (40.45%),Korba (51.92%), Raipur (81.30%) and Mahasamund (94.11%). Variability in area of remaining districts of Chhattisgarh (37.89%) and overall Chhattisgarh state have found 37.36%.

2.3 Production

In Table 1.4, the absolute change, relative change and coefficient of variation are calculated to determine the variation in coriander production over the period of time. Coriander production in Chhattisgarh increased by 314.27 percent (46.66 thousand tonne) from 14.85 thousand tonne (base year) to 61.51 thousand tonne (current year), with a fluctuation of 57.12 per cent during the period under study (Table 4.8) With a fluctuation of 137.29 per cent the area of coriander in Mahasamund district increased 52350.00 per cent (10.47 thousand tonne) from 0.02 thousand tonne (base year) to 10.49 thousand tonne (current year) followed by production of coriander in different district of Chhattisgarh was found to be Raipur district increased by 937.27 per cent (7.88 thousand tonne) from 0.84 thousand tonne (base year) to 8.72 thousand tonne (current year) with a 110.61 per cent fluctuation, Korba district increased by 942.17 per cent (4.33 thousand tonne) from 0.46 thousand tonne (base year) to 4.79 thousand tonne (current year) with a 89.21 per cent fluctuation, Durg district increased by 1010.67 per cent (6.49 thousand tonne) from 0.64 thousand tonne (base year) to 7.13 thousand tonne (current year) with a 80.45 per cent fluctuation, Rajnandgaon district increased by 2060.00 per cent (2.06 thousand tonne) from 0.10 thousand tonne (base year) to 2.16 thousand tonne (current year) with a 53.77 per cent fluctuation, Dhamtari district increased by 148.15 per cent (3.06 thousand tonne) from 2.07 thousand tonne (base year) to 5.13 thousand tonne (current year) with a 50.17 per cent fluctuation, Raighar district increased by 134.27 per cent (4.28 thousand tonne) from 3.19

thousand hectare (base year) to 7.46 thousand tonne (current year) with a 48.49 per cent fluctuation, lowest fluctuation of surguja district increased by 10.68 per cent (0.48 thousand tonne) from 4.51 thousand tonne (base year) to 4.99 thousand hectare (current year) with a 41.48 per cent fluctuation and total selected district increased by 330.35 per cent (39.05 thousand tonne) from 11.82 thousand tonne (base year) to 50.88 thousand tonne (current year) with a 60.41 per cent fluctuation and other remaining districts increased by 251.45 per cent (7.61 thousand tonne) from 3.03 thousand tonne (base year) to 10.63 thousand hectare (current year) with a 48.37 per cent fluctuation.

Table 1.4: Change and Fluctuation in production of coriander in different districts of Chhattisgarh

Districts	Production (000'Tonne)					
	Base year (000'Tonnes)	**Current year (000'Tonnes)**	**Absolute change (000'Tonnes)**	**Relative change %**	**S.D**	**Coeff. of Variation %**
Raipur	0.84	8.72	7.88	937.27	7.67	110.61
Mahasamund	0.02	10.49	10.47	52350.00	5.05	137.29
Dhamtari	2.07	5.13	3.06	148.15	1.82	50.17
Durg	0.64	7.13	6.49	1010.67	8.34	80.45
Surguja	4.51	4.99	0.48	10.68	1.81	41.48
Korba	0.46	4.79	4.33	942.17	2.28	89.21
Raigarh	3.19	7.46	4.28	134.27	3.47	48.49
Rajnandgaon	0.10	2.16	2.06	2060.00	0.77	53.77
Total selected	11.82	50.88	39.05	330.35	24.23	60.41
Others	3.03	10.63	7.61	251.45	4.62	48.37
CG	14.85	61.51	46.66	314.27	28.36	57.12

Thus, the absolute change in production of coriander in Mahasamund district was found to be maximum (10.47 thousand tonne) followed by Raipur (7.88 thousand tonne), durg (6.49 thousand tonne), Korba (4.33 thousand tonne), Raighar (4.28thousand tonne), Dhamtari (3.06 thousand tonne) and Rajnandgaon (2.06 thousand tonne). Absolute change in production of remaining districts of Chhattisgarh was (7.61 thousand tonne) and Chhattisgarh state it was found to be 46.66 thousand tonne respectively.

The relative change ~~of~~ in theproduction of coriander in Mahasamund district was found to be maximum (44875.72%), Rajnandgaon (2060.00%), Durge (1010.67%), Korba (942.17%), Raipur (937.27%),Dhamtari (148.15%), Raighar (134.27%) and Surguja (10.68%). ~~Relative change in production of~~ While the remaining districts of Chhattisgarh was (251.45%) and Chhattisgarh state have found 314.27% respectively.

2.4 Extent of variability in production of coriander in different districts of Chhattisgarh

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The production was minimum and more stable ~~in~~ atSurguja district (41.48%) followed by Raighar (48.49%), Dhamtari (50.17%), Rajnandgaon (53.77%), Durg (80.45%), Korba (89.21%), Raipur(110.61%) and Mahasamund (137.29%). While ~~V~~variability in production of remaining districts of Chhattisgarh ~~(48.37%)~~ and overall Chhattisgarh state were (48.37%) ~~have found~~and 57.12% respectively.

2.5 Productivity

The absolute change, relative change, and coefficient of variation used to determine variance in coriander productivity over time are shown in table 1.5. Productivity of coriander in Chhattisgarh was found to be increased by 57.53 per cent (1.47 thousand tonne) from 2.55 tonne/ hectare (in base year) to 4.02 tonne/hectare (current year) in Chhattisgarh with a fluctuation of 25.83 per cent during the period under study, with a fluctuation of 82.22 per cent the productivity of coriander in Mahasamund district increased 3114.28 per cent (8.72 thousand tonne) from 0.28 tonne/hectare (base year) to 9.00 tonne/hectare (current year). followed by production of coriander in different district of Chhattisgarh was found to be Korba district increased by 84.68 per cent (3.20 thousand tonne) from 3.78 tonne/hectare (base year) to 6.98 tonne/hectare (current year) with a 49.72 per cent fluctuation, Raipur district increased by 34.24 per cent (1.60 thousand tonne) from 4.66 tonne/hectare (base year) to 6.26 tonne/hectare (current year) with a 44.69 per cent fluctuation, Rajnandgaon district increased by 679.71 per cent (3.39 thousand tonne) from 0.50 tonne/hectare (base year) to 3.88 tonne/hectare (current year) with a 44.04 per cent fluctuation, Dhamtari district decreased by -8.14 per cent (-0.44 thousand tonne) from 5.41 tonne/hectare (base year) to 4.97 tonne/hectare (current year) with a 59.17 per cent fluctuation, Surguja district also decreased by -30.87 per cent (-1.95 thousand tonne) from 6.32 tonne/hectare (base year) to 4.37 tonne/hectare (current year) with a 51.01 per cent fluctuation and total selected district increased by 94.73 per cent (2.72 thousand tonne) from 2.87 tonne/hectare (base year) to 5.58 tonne/hectare (current year) with a 29.49 per cent fluctuation and other remaining districts decreased by -2.46 per cent (-0.04 thousand tonne) from 1.82 tonne/hectare (base year) to 1.77 tonne/hectare (current year) with a 34.84 per cent fluctuation.

Table ~~1.5 :~~1.5: Change and Fluctuation in productivity of coriander in different districts of Chhattisgarh

Districts	Productivity (Tonnes/ha)					
	Base year(Tonnes/ ha)	Current year(Tonnes/ ha)	Absolute change(Tonnes/ha)	Relative change%	S.D	Coeff. of Variation %
Raipur	4.66	6.26	1.60	34.24	2.17	44.69

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Mahasamund	0.28	9.00	8.72	3114.28	3.21	82.22
Dhamtari	5.41	4.97	-0.44	-8.14	3.08	59.17
Durg	0.72	3.78	3.06	428.61	3.98	69.46
Surguja	6.32	4.37	-1.95	-30.87	2.20	51.01
Korba	3.78	6.98	3.20	84.68	2.13	49.72
Raigarh	1.99	3.92	1.94	97.34	0.84	25.46
Rajnandgaon	0.50	3.88	3.39	679.71	1.25	44.04
Total selected	2.87	5.58	2.72	94.73	1.34	29.49
Others	1.82	1.77	-0.04	-2.46	0.72	34.84
CG	2.55	4.02	1.47	57.53	0.94	25.83

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The absolute change in productivity of coriander in Mahasamund district has studied maximum (8.72 thousand tonne) followed by Rajnandgaon (3.39 thousand tonne), Korba (3.20 thousand tonne), Durg (3.06 thousand tonne), Raighar (1.94 thousand tonne) and Raipur (1.60 thousand tonne) have positively changed but in case of Dhamtari (-0.44 thousand tonne), Surguja (-1.95 thousand tonne) and remaining districts of Chhattisgarh (-0.04 thousand tonne) have negatively changed. Absolute change in productivity of Chhattisgarh state it was found 1.47 thousand tonne).

The relative change in productivity of coriander in Mahasamund district was concluded (3114.28%), followed by Rajnandgaon (679.71%), Durge (428.61%), Raighar(97.68%), Korba (84.68%), Raipur (34.24%) have positively changed, but in case of Dhamtari (-8.14), Surguja (-30.87%) and remaining districts of Chhattisgarh (-2.46%) have negatively changed. Relative change in production of Chhattisgarh state it was found to be (57.53%).

2.6 Extent of variability in productivity of coriander in different districts of Chhattisgarh

The productivity was examined minimum and more stable in Raighar district (25.46%) followed by Rajnandgaon (44.04%), Raipur (44.69%), Korba (49.72%), Durg (69.17%), Mahasamund (82.22%), Dhaamtari (59.15%) and Surguja (51.01%). Variability in productivity of remaining districts of Chhattisgarh (34.84%) and overall Chhattisgarh state have found to be 25.83%.

3.0 Trend and Growth performance of coriander in Different district of Chhattisgarh state

3.1 Trend and growth in area of coriander in different districts of Chhattisgarh

In Chhattisgarh, the simple growth rate in coriander area was found to be 5.50 percent per annum, with 9.34 Raipur, 14.92 Mahasamund, 7.67 Dhamtari, 1.54 Durg, 2.63 Surguja, 7.40 Korba, 2.21 Raighar, 3.31 Rajnandgaon and 5.07 total selected districts growing at 5.50 percent per annum, and the remaining districts growing at 6.27 percent per annum. The area of coriander in Chhattisgarh state was found to be positive and highly significant (Table 1.6.).

Table ~~1.6 :~~1.6: Trend and growth in area of coriander in different districts of Chhattisgarh during 2004-05 to 2020-21

Districts	Area		(thousand hectare)	
	Trend value (b)	**SE**	**t-value**	**SGR(%)**
Raipur	0.11 *	0.04	2.76	9.34
Mahasamund	0.09 **	0.01	5.18	14.92
Dhamtari	0.05 **	0.003	14.72	7.67
Durg	0.02	0.02	0.76	1.54
Surguja	0.03 **	0.006	4.34	2.63
Korba	0.04 **	0.01	4.01	7.40
Raigarh	0.05	0.03	1.46	2.21
Rajnandgaon	0.01 *	0.006	2.47	3.31
Total selected	0.41 **	0.11	3.51	5.07
Others	0.29 **	0.04	5.91	6.27
CG	0.70 **	0.16	4.31	5.50

** = at 1% level of significance (2.94), * = at 5%level of significance (2.13)

Simple growth rate of coriander was studied maximum in Mahasamund district (14.92%), followed by Raipur (9.36%), Dhamtari (7.67%), Korba (7.40%),Rajnandgaon (3.31%), Surguja (2.63%), Raighar (2.21%) and Durg (1.54%). Simple growth rate of remainingdistricts of Chhattisgarh was 6.27% and overall Chhattisgarh state have found 5.50%.

3.2Trend and growth in production of coriander in different districts of Chhattisgarh

The simple growth rate in production of coriander was found to be 8.51 per cent per annum in Chhattisgarh ,13.27 Raipur, 21.12 Mahasamund,6.15 Dhamtari,6.91 Durg, 3.04 Surguja, 12.96 Korba 5.93 Raighar, 6.08 Rajnandgaon and 9.00 per cent total selected districts and remaining remainingdistricts 6.44 per cent per annum in Chhattisgarh state. Except in Durg and Surguja districts, coriander output in Chhattisgarh was determined to be favourable and highly significant. (Table 1.7)

Table ~~1.7 :~~1.7: Trend and growth in production of coriander in different districts of Chhattisgarh during 2004-05 to 2020-21

	Production		(thousand tonnes)	
Districts	**Trend value (b)**	**SE**	**t-value**	**SGR(%)**
Raipur	0.92 **	0.31	2.95	13.27
Mahasamund	0.78 **	0.16	4.78	21.12
Dhamtari	0.22 **	0.07	3.05	6.15
Durg	0.72	0.38	1.86	6.91
Surguja	0.13	0.08	1.54	3.04
Korba	0.33 **	0.07	4.18	12.96
Raigarh	0.42 **	0.13	3.04	5.93
Rajnandgaon	0.09 *	0.03	2.69	6.08

Total selected	3.61 **	0.81	4.42	9.00
Others	0.61 **	0.17	3.52	6.44
CG	4.22 **	0.95	4.42	8.51

** = at 1% level of significance (2.94), * = at 5%level of significance (2.13)

Simple growth rate of coriander was found to be maximum in Mahasamund district (21.12%), followed by Raipur (13.27%), Korba(12.96%), Durg (6.91%), Dhamtari (6.91%), Rajnandgaon (6.08%) and Surguja (3.04%).Simple growth rate of remaining districts of Chhattisgarh was 6.44% and overall Chhattisgarh state have found 8.51%.

3.3 Trend and growth in productivity of coriander in different districts of Chhattisgarh

In Chhattisgarh, the simple growth rate in coriander productivity was 3.56 per cent per annum, with 4.28 Raipur, 14.70 Mahasamund, 5.27 Conditions must exist, 5.89 Korba,4.43Raighar, 5.59 Rajnandgaon and 4.89 total selected districts are increasing growth. simple growth rate of Dhamtari (-1.58 %), Surguja (-0.53 %) and remaining districts (-0.07%) have found decreasing per annum. The productivity of coriander in Chhattisgarh state was found to be positive and highly significant, except Dhamtari, Surguja and remaining districts of Chhattisgarh.(Table 1.8).

Table ~~1.8 :~~1.8: Trend and growth in productivity of coriander in different districts of Chhattisgarh during 2004-05 to 2020-21

	Productivity (tonnes/hectare)			
Districts	**Trend value (b)**	**SE**	**t-value**	**SGR(%)**
Raipur	0.21 *	0.09	2.14	4.28
Mahasamund	0.57 **	0.07	8.14	14.70
Dhamtari	-0.08	0.15	-0.53	-1.58
Durg	0.30	0.18	1.61	5.27
Surguja	-0.02	0.11	-0.20	-0.53
Korba	0.25 **	0.08	2.89	5.89
Raigarh	0.15 **	0.02	7.10	4.43
Rajnandgaon	0.16**	0.04	3.23	5.59
Total selected	0.22 **	0.03	5.92	4.89
Others	0.00	0.03	-0.04	-0.07
CG	0.13 **	0.03	3.76	3.56

** = at 1% level of significance (2.94), * = at 5%level of significance (2.13)

Simple growth rate of coriander to be maximum in Mahasamund district (14.70%), Korba (5.89%), Rajnandgaon (5.59%), Durg (5.27%), Raighar (4.43%), Raipur (4.28%) and negative in Surguja (-0.53%) and Dhamtari (-1.53%). Simple growth rate ~~of remainingdistricts~~of remainingdistricts of Chhattisgarh was -0.07% and overall Chhattisgarh state have found 3.56%.

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Trend in area of coriander had shown positive and highly significant in Mahasamund, Dhamtari, Surguja, Korba, and Chhattisgarh state, moderate significant in Raipur and Rajnandgaon and non-significant in Raighar district.

Trend in production of coriander had show positive and highly significant in Raipur, Mahasamund, Dhamtari, Korba, Raighar and overall Chhattisgarh state, moderate significant in only rajnandgaon and non-significant in Durg and Surguja district.

Trend in productivity of coriander had show positive and highly significant in Mahasamund, Korba, Raighar, Rajnandgaon and overall Chhattisgarh state, moderate significant in only Raipur district, non-significant in Dhamtari, Durg and Surgujadristrict.

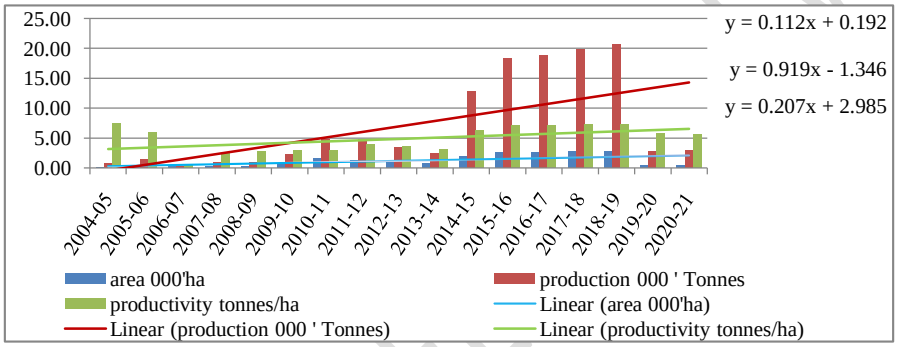

Fig. 1.1: Trend of area, production and productivity of Coriander in Raipur district of CG

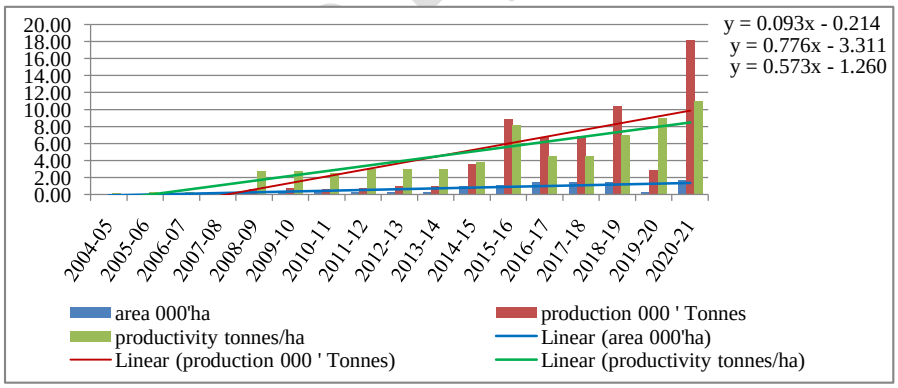

Fig. 1.2: Trend of area, production and productivity of Coriander in Mahasamund district of CG

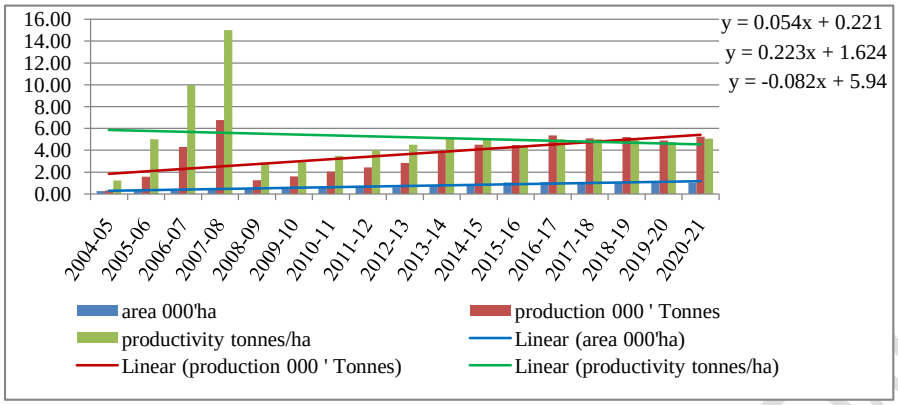

Fig. 1.3: Trend of area, production and productivity of Coriander in Dhamtari district of CG

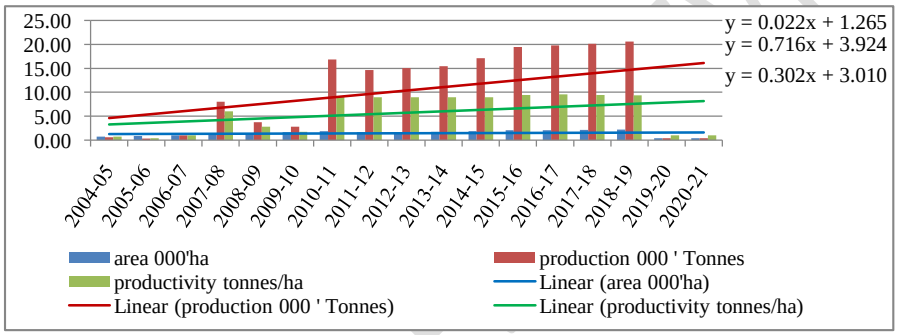

Fig. 1.4: Trend of area, production and productivity of Coriander in Durg district of CG

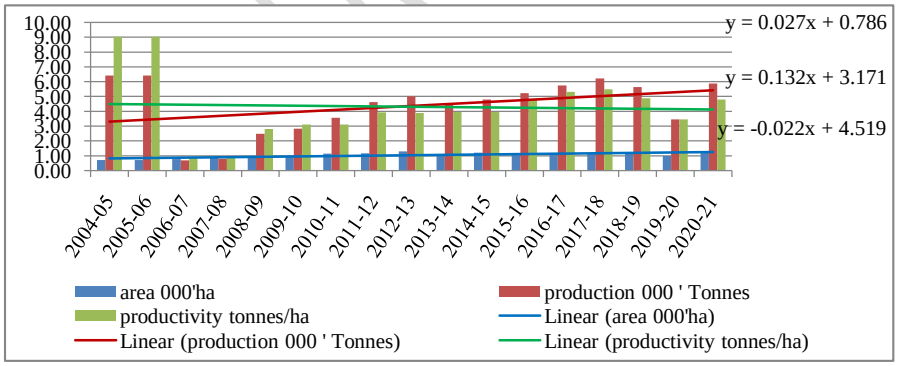

Fig. 1.5: Trend of area, production and productivity of Coriander in Surguja district of CG

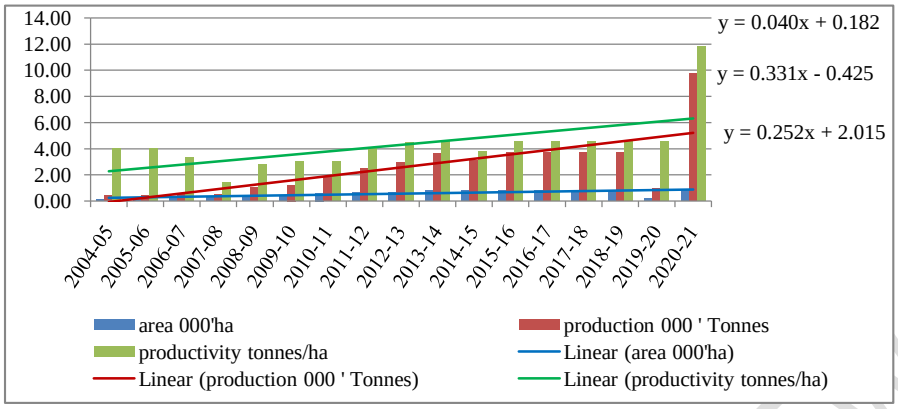

Fig. 1.6: Trend of area, production and productivity of Coriander in Korba district of CG

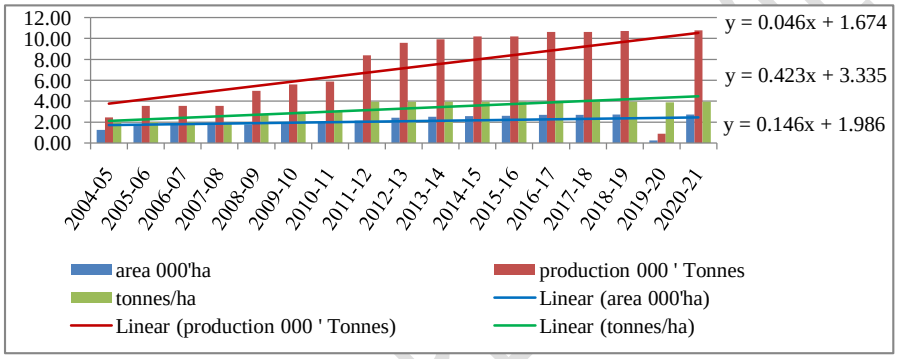

Fig. 1.7: Trend of area, production and productivity of Coriander in Raigarh district of CG

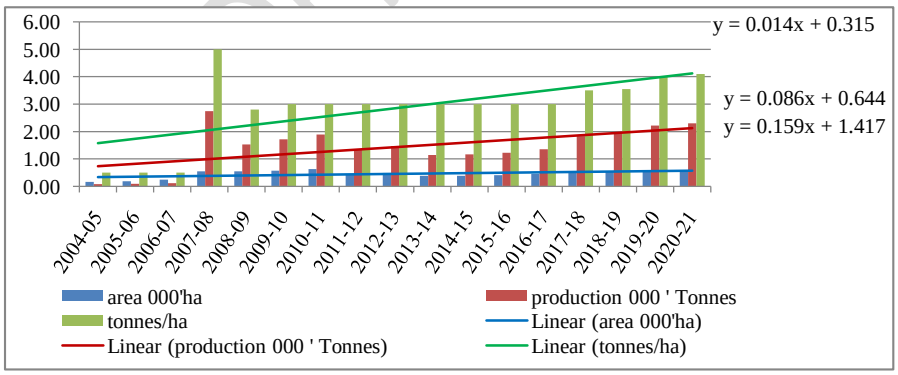

Fig. 1.8: Trend of area, production and productivity of Coriander in Rajnandgaon district of CG

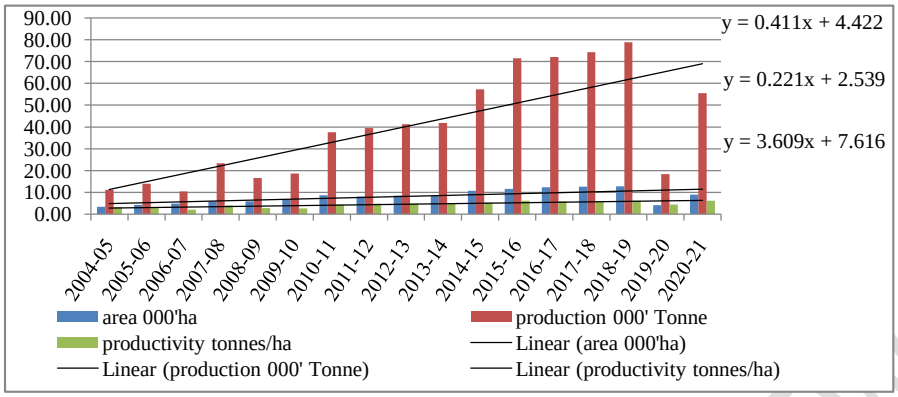

Fig. 1.9: Trend of area, production and productivity of Coriander in Major selected districts of CG

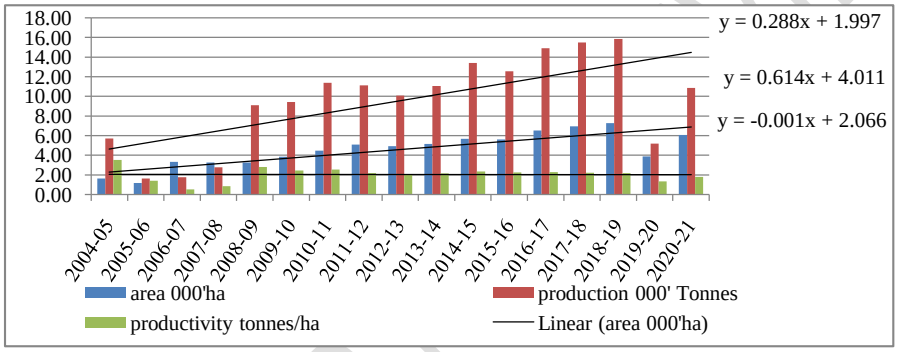

Fig. 1.10: Trend of area, production and productivity of Coriander in others districts of CG

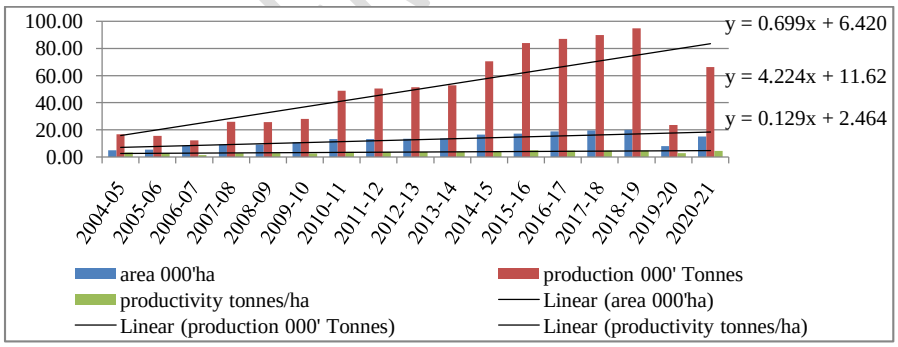

Fig. 1.11: Trend of area, production and productivity of Coriander in CG

Comments: Nothing was discussed about the figures 1.1 to 1.11, why? Each figure should be briefly discussed or else remove it completely.

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