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A review of compound growth rate of area, production and productivity of tomato in Durg district compared to Chhattisgarh

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Abstract
In this paper we have reviewed the growth pattern of the tomato crop both production wise and area wise in the last 10 years. The data used is secondary data from the website of Chhattisgarh agricultural department and the data of Chhattisgarh is compared with the data of Durg district. The data shows that the area of production of tomato crop has increased from 3785 ha. (2012-13) to 9507 ha. (2021-22) in Durg district. In the same period the area of tomato crop has increased from 47971 ha.to 61380 ha. in Chhattisgarh. The production of tomato crop has increased from 94663 MT (2012-13) to 190140 MT (2021-22) in Durg district. In the same period the production of tomato crop has increased from 762216 MT to 1062076 MT in Chhattisgarh.

Keywords: Production, growth pattern, CAGR

Introduction
India is considered as vegetable basket of the world. India is second in terms of vegetable and fruit production in the world, with around 200 million tonnes of production of vegetable in approximately 11 million ha. during year 2020-21. India accounts for over 14% of the production with over 15% of land area in the world. India's climate is very much suitable for vegetable production. India is highest producer of ginger and okra in the world whereas 2nd largest producer of potato, onion, cabbage, cauliflower, and brinjal. With this huge amount of production, it gives opportunity for the export as well. India exported vegetable worth of rupees 5745 crores and processed vegetables of around 8304 crores in FY 2021-22. In India UP is first in production of vegetable with around 28 million MTs of production whereas Chhattisgarh is 10th with around 7 million MTs of production during 2017-18. Tomato is one of the most important vegetables in day today life. The productivity of tomato crop is below average as compared to national average, so there is a vast scope of production improvement.

Analytical Tools
Calculation of compound average growth rate
Calculation of compound annual growth rate for area, production and productivity will be done by the formula:

$$\left[\frac{Final\ Value}{Initial\ Value}\right]^{\frac{1}{n}} - 1$$, where n is the number of years into consideration.

Result and Discussion
The following table shows the compound annual growth rate of area, production and productivity of tomato crop in Durg district as well as Chhattisgarh during 2012-13 to 2021-22.

Table 1: CAGR of Area, Production and Productivity.

Sr. No.	Region	CAGR in Area	CAGR in Production	CAGR in productivity
1.	Durg	9.64%	7.22%	-2.21%
2.	Chhattisgarh	2.5%	3.37%	0.86%

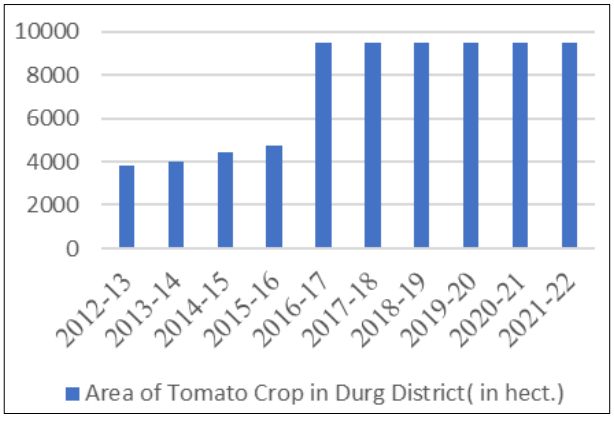
Table 1 represents the CAGR of area, production and productivity of tomato crop in Durg as well as Chhattisgarh. The CAGR of area in Durg district is 9.64% which is significant whereas the CAGR of area for Chhattisgarh is only 2.5% which is less than that of Durg district, Similarly the CAGR for production of tomato crop in Durg district is 7.22% as compared to CAGR for Chhattisgarh is only 3.37%. The CAGR for productivity of Chhattisgarh is higher as compared to Durg district.

Table 2: Area, Production and Productivity in Durg district during 2012-13 to 2021-22

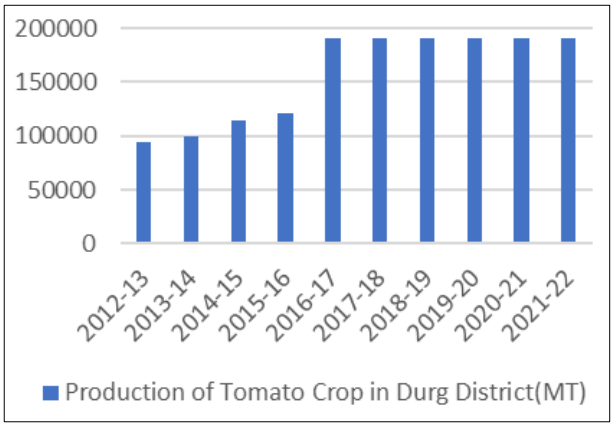
Sr. No.	Year	Area (in Ha.)	Production (in MT)	Productivity (MT/Ha.)
1.	2012-13	3785	94663	25.01
2.	2013-14	3974	99350	25
3.	2014-15	4410	114660	26
4.	2015-16	4723	121498	25.72
5.	2016-17	9500	190000	20
6.	2017-18	9505	190100	20
7.	2018-19	9507	190140	20
8.	2019-20	9507	190140	20
9.	2020-21	9507	190140	20
10.	2021-22	9507	190140	20

Source: agriportal.cg.nic.in

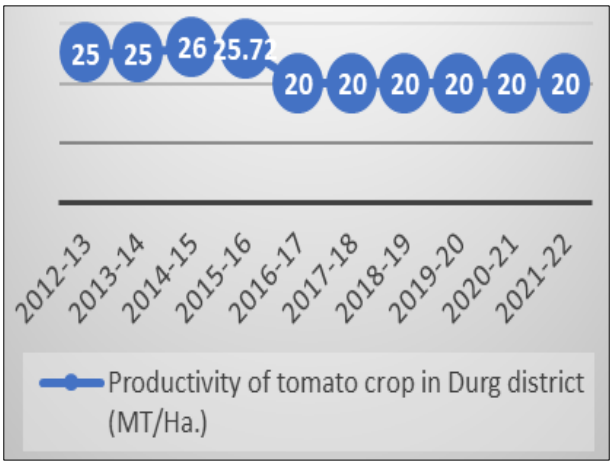
The above table shows area, production and productivity during FY 2012-13 to FY2021-22 in Durg district. Data clearly shows that area of tomato crop increased from 3785 ha. to 9507 ha. in the above said period, similarly in the same period the production increased from 94663 MTs to 190140 MTs. The above data is also shown with the help of charts.



Area of Tomato Crop in Durg District (in hect.)



Production of Tomato Crop in Durg District (MT)



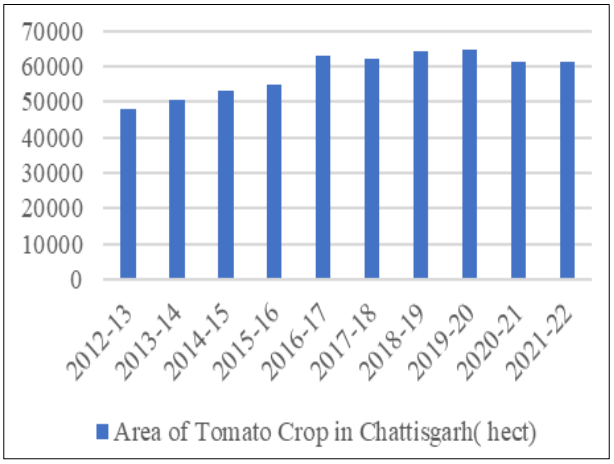
Productivity of tomato crop in Durg district (MT/Ha.)

Table 3: Area, Production and Productivity in Chhattisgarh during 2012-13 to 2021-22

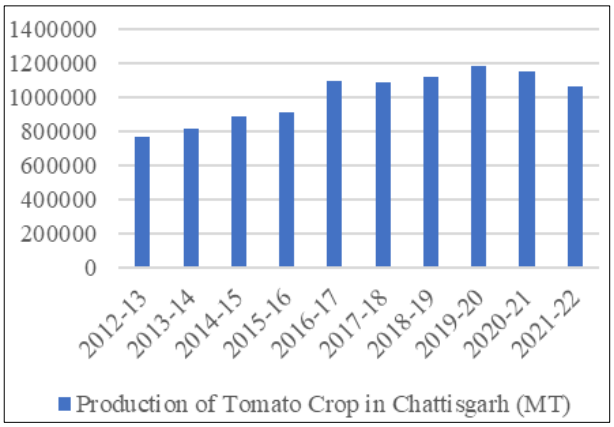
Sr. No.	Year	Area (in Ha.)	Production (in MT)	Productivity (MT/Ha.)
1.	2012-13	47971	762216	15.88
2.	2013-14	50375	814216	16.16
3.	2014-15	53051	886104	16.70
4.	2015-16	54907	908980	16.55
5.	2016-17	62803	1089976	17.35
6.	2017-18	62161	1088674	17.51
7.	2018-19	64383	1114802	17.31
8.	2019-20	64717	1182648	18.27
9.	2020-21	61333	1151488	18.77
10.	2021-22	61380	1062076	17.30

Source: agriportal.cg.nic.in

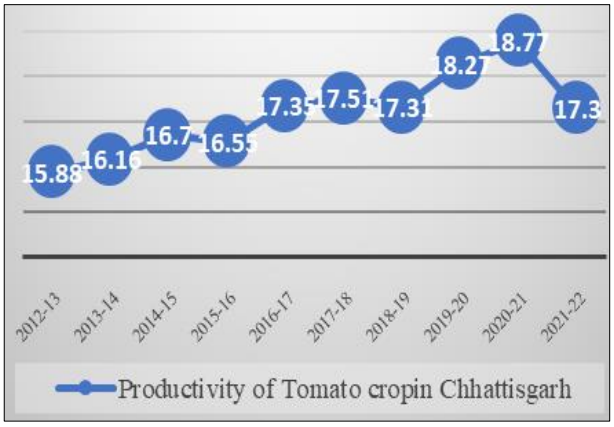
The above table shows area, production and productivity during FY 2012-13 toFY2021-22 in Chhattisgarh. Data clearly shows that area of tomato crop increased from 47971 ha. to 61380 ha. in the above said period, similarly in the same period the production increased from 762216 MTs to 1062076 MTs. The above data is also shown with the help of charts.



Area of Tomato Crop in Chhattisgarh (hect)



Production of Tomato Crop in Chhattisgarh (MT)



Productivity of Tomato crop in Chhattisgarh

Conclusion

The following conclusions can be drawn from the above discussion. The data is for the period of 2012-13 to 2021-22. For the same period the CAGR of Area for tomato crop is found to be 9.64% for Durg district whereas 2.5% for Chhattisgarh state, both the data are significant. The CAGR of Production for tomato crop is found to be 7.22% for Durg district whereas 3.37% for Chhattisgarh state, both the data are significant. The CAGR of Productivity for tomato crop is found to be -2.21% for Durg district whereas 0.86% for Chhattisgarh state.

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