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Estimate the compound annual growth rate (CAGR) in collection of Harra in Chhattisgarh state

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Abstract
The present study was carried out to estimate the Compound annual growth rate of collection of Harra in Chhattisgarh. The current study made use of secondary data on collection from 2010-11 to 2019-20 was collected from various government sources including the Directorate of Economics & Statistics and Department of Forest etc. To examine the growth rates in collection of Harra in Chhattisgarh for the period of 2010-11 to 2019-20 exponential form were estimated. It can be clearly seen that the Growth rate in collection of Harra in Chhattisgarh is presented in Table 1. It can be clearly seen from the table that the collection of Harra in Chhattisgarh registered negative non-significant growth rate.

Keywords: Compound growth rate, collection, trend & Harra

1. Introduction
Non-timber forest products (NTFPs), also known as non-wood forest products (NWFPs), minor forest produce (MFP), special, alternative and secondary forest products. Non-timber forest products (NTFPs) are of socio-economic and cultural importance for the forest dwelling communities, particularly for the tropical countries like India (Yadav and Dugaya, 2013) [5]. The NTFPs play imperative roles in the livelihoods of millions of rural and urban people across the globe. It is well established that NTFPs fulfils multiple functions in supporting human well being. Conceptually NTFPs refers to all biological materials other than timber extracted from natural forests for human and animal use. The NTFPs provide the products for food, shelter, medicines, fibers, energy and cultural artifacts for many of the world's poorest people and a considerable proportion of the less poor. The contribution of these daily net resources to livelihoods typically ranges from 10-60% of total household income. The NTFPs also provide many households with a means of income generation, either as supplementary income to other livelihood activities, or as the primary means of cash generation. Non-Timber Forest Products (NTFPs) or the Minor Forest Products (MFPs) are the important source of livelihoods for tribal people and the other communities which are residing around forests. About 20 - 40% of annual income of tribal is contributed by the NTFPs (Planning Commission, 2011).
Harra popularly known as myrobolan. Harra is used in tannin and Pharma Industries. It is one of the ingredients of Triphala powder prescribed in the Ayurvedic prescriptions. The approximate potential production of Harra in the state was about 60,000 quintals per year but production of Harra varies from year to year. The use of Harra is beneficial for eyes and general weakness due to its Chakshuya (good for eyes) and Brahan (improves health) nature. It also helps to reduce body ache due to the Vata Anuloma (Vata balancing) property. The oil obtained from Harra seeds is used to improve the motility of the gastrointestinal tract.

2. Materials and Methods
2.1 Method of enquiry and data collection
The current study made use of secondary data on collection of Harra from 2010-11 to 2019-20 were collected from various government sources including the Directorate of Economics & Statistics and Department of Forest etc. to estimate the compound annual growth rates in collection of Harra.

2.2: Analytical tools
2.2.1: Computation of growth rate
Compound annual growth rates in Collection of Harra in Chhattisgarh state was done by fitting

an exponential function of the following form.

$Y = \alpha \beta t$
$\log Y = \log \alpha + t \log \beta$

Where,
Y= Collection of Harra in Chhattisgarh
α= Constant
β= Regression coefficient
t= time in year
Annual compound growth rate (%) = (Antilog β-1)100.

3. Result and Discussion
To examine the growth rates in collection of Harra in Chhattisgarh for the period of 2010-11 to 2019-20 exponential form were estimated.

3.1 Growth rate in collection of Harra-
Growth rate in collection of Harra in Chhattisgarh is presented in Table 1. It can be clearly seen from the table that the collection of Harra in Chhattisgarh registered negative non-significant growth rate. The R^2 value was 0.23 indicating 23 per cent of the total variation in the year of collection was explained by the Harra.

Table 1: Compound Growth Rate of Collection of Harra

S. No	Region	Compound Growth Rate	R^2	P-Value
1.	Chhattisgarh	-31.21 ^{NS}	0.23	0.16

Note: NS = Non-significant.

Table 2: Collection of Harra in Chhattisgarh

S. No.	Year	Collection (qt.)
1.	2010-11	16343.80
2.	2011-12	71480.30
3.	2012-13	29734.20
4.	2013-14	15803.10
5.	2014-15	34188.50
6.	2015-16	34189
7.	2016-17	57089
8.	2017-18	125.87
9.	2018-19	1802.77
10.	2019-20	4072

Source: Directorate of Economics & Statistics, Ministry of Agriculture, Govt. of India.

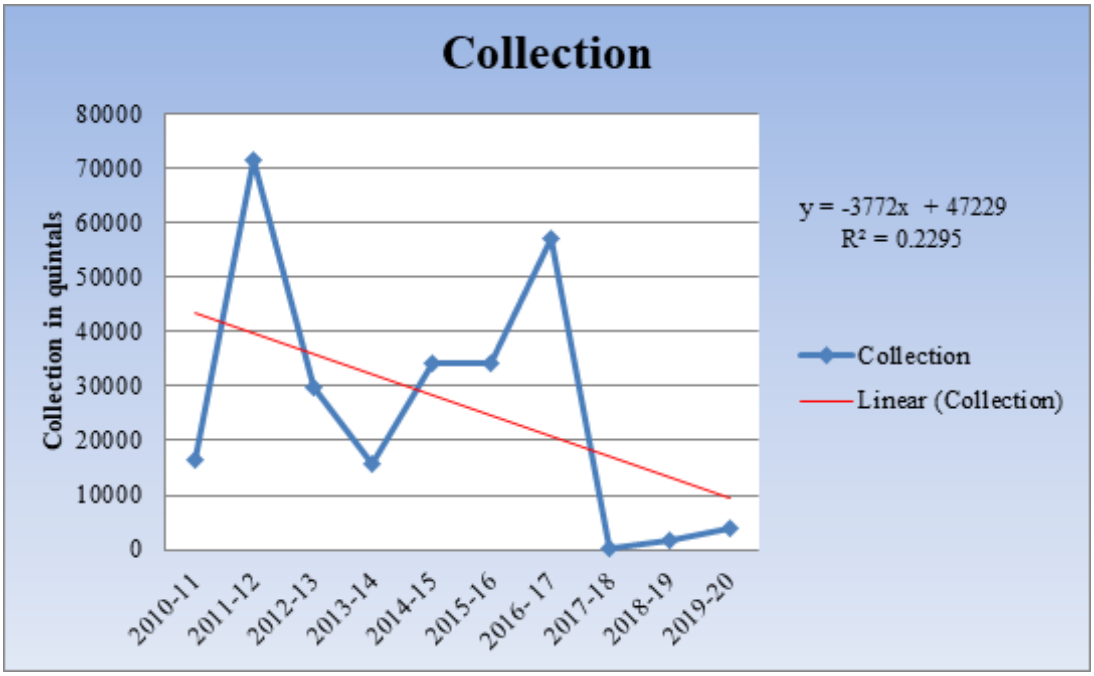

Fig 1: Trend in collection of Harra in Chhattisgarh state

4. Conclusion
Growth rate in collection of Harra in Chhattisgarh is presented in Table 1. It can be clearly seen from the table that the collection of Harra in Chhattisgarh registered negative non-significant growth rate.

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