

Growth trends in Area, Production and Yield of Garlic in Haryana vis-à-vis India

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ABSTRACT

The analysis of growth is usually used in economic studies to find out the trend of a particular variable over a period of time and used for making policy decisions. The growth in the area, production and yield of garlic in Haryana vis-à-vis India was estimated using the compound growth function. The necessary secondary data were collected for a period of 27 years from 1990-91 to 2016-17. During 1990-91 to 2016-17, in Haryana growth rates showed a significant positive growth in area, production and yield under garlic. Likewise, India as a whole country also showed a significant positive growth in area, production and yield under garlic. Maximum area in India under garlic was cultivated in 2016-17 i.e. 321 thousand hectares while minimum area under garlic was cultivated in 2000-01 which was 74.9 thousand hectares. In case of production, Maximum production of garlic in 2016-17 i.e. 1693 thousand metric tonnes. Maximum yield under garlic was taken in year 2010-11 i.e. Six metric tonne per hectare.

Key words: Garlic, Growth rates, Productivity

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INTRODUCTION

Spices constitute an important group of agricultural commodities which are virtually indispensable in the culinary art. In India, spices are important commercial crops from the point of view of both domestic consumption and export. India is famous for its spices that are widely used in industries like pharmaceutical, perfumery and cosmetics. The climate of our country is suitable for almost all spices. Spices are distinguished from herbs, which are a part of leafy green plants used for flavoring or as garnish. Spices are those plants, the products of which are made use as food adjuncts to add aroma and flavor. Garlic (*Allium sativum*) is an important condiment crop with a bulbous root and it has been cultivated for years. Today it is popular throughout the world for its distinctive flavor, health giving properties and its usage in culinary preparations. The garlic plant's bulb is the most commonly used part of the plant. With the exception of the single clove types, the bulb is divided into numerous fleshy sections called cloves. The cloves are used for cloning, consumption (raw or cooked) and in the preparation of medicines and have a characteristic pungent, spicy flavor that mellows and sweetens considerably with cooking [1, 2]. The leaves and flowers (bulbils) on the head (spathe) are also edible and being milder in flavor than the bulbs, which are most often consumed.

MATERIAL AND METHODS

The study on growth in area, production and yield of garlic was purposively taken up in Haryana vis-à-vis India. The secondary data on area, production and productivity of crops were used to analyse the trends. The analysis was covered for the period from 1990-91 to

2016-17. Time series data pertaining to area, production, productivity of pulses was collected from different published sources. To quantify the growth of area, production and productivity of garlic, compound growth rates were estimated by fitting to the time-series data in exponential function [3] of the following form:

$$Y = ab^t \quad \text{--- (1)}$$

Where,

Y = Index number of area, production, productivity as the dependent variable

t = Time variable (year) as independent variable

a = Intercept

b = Regression coefficient

Equation (1) can be expressed in logarithmic form as follows:

$$\log y = \log a + t \log b \quad \text{--- (2)}$$

$$\log y = A + B t \quad \text{--- (3)}$$

Where,

A = $\log a$

B = $\log b$

the compound growth rate "r" was computed as:

$$r = (\text{Antilog of } b - 1) \times 100 \quad \text{---(4)}$$

Secondary data related to import, export and per capita availability of pulses was also for the study from different published sources.

RESULT AND DISCUSSION

Growth trends in Haryana

To estimate the growth performance of area, production and yield of garlic in the Haryana vis-à-vis India during the period 1990-91 to 2016-17, time series data were analyzed. In Haryana, mostly area under garlic has been cultivated in Karnal, Yamunanagar, Ambala, Kurukshetra, Kaithal, Fatehabad districts of Haryana.

Table 1: Growth rate of garlic in Haryana

Year	Area (in '000 Hectare)	Production (in '000 MT)	Yield in MT/Hectare)
1990-91 to 1999-00	-0.69	-6.25	-5.67
2000-01 to 2009-10	4.2	1.65	-3.56
2010-11 to 2016-17	12.52	10.78	-1.92
1990-91 to 2016-17	8.35	6.77	-1.49

It is evident from the table 1 that in Haryana, compound growth rate during the period of 1990-91 to 2016-17 was 8.35 per cent i.e. increasing in trend of area of garlic. Likewise, production of garlic shows a positive growth (6.77 %), but yield shows a negative growth trend i.e. -1.49 per cent. As we see the decadal growth of the area of garlic, in 1990-91 to 1999-00 it was negative (-0.69 %), but in 2000-01 to 2009-10 and 2010-11 to 2016-17 is was positive growth in the area 4.2 and 12.52 per cent, respectively. In production the decadal growth of the garlic, in 1990-91 to 1999-00 it was negative (-6.25 %), but in 2000-01 to 2009-10 and 2010-11 to 2016-17 is was positive growth rate 1.65 and 10.75 per cent, respectively. But in case of yield all the decadal growth 1990-91 to 1999-00, 2000-01 to 2009-10 and 2010-11 to 2016-17 was negative -5.76, -3.56 and -1.92 per cent, respectively.

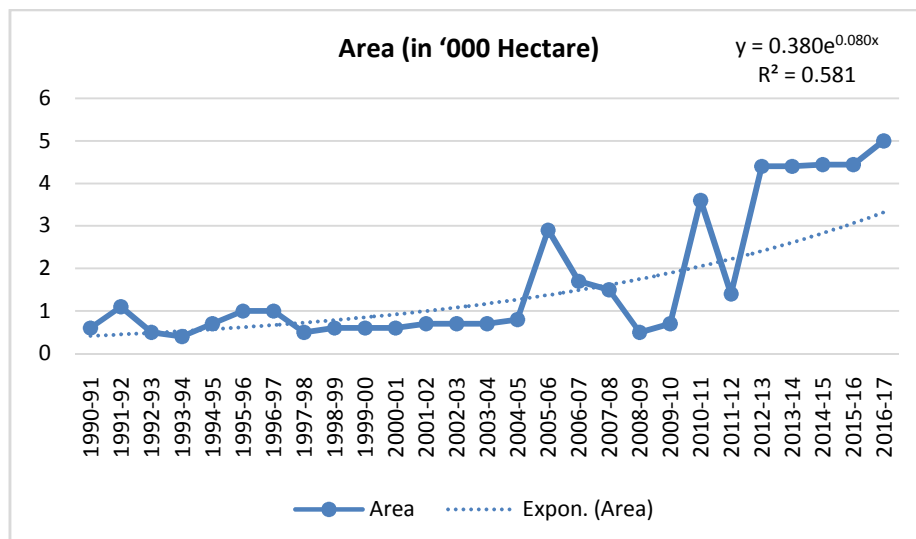


Fig-1 Trends of area in garlic in Haryana

Maximum area in Haryana under garlic was cultivated in 2016-17 i.e. Five thousand hectare while minimum area under garlic was cultivated in 1993-94 which was 400 hectares. In case of production, Maximum production of garlic in 2014-15 and 2015-16 i.e. 35.83 thousand metric tonnes. Maximum yield under garlic was taken in year 2006-07 i.e. 13.8 metric tonne per hectare.

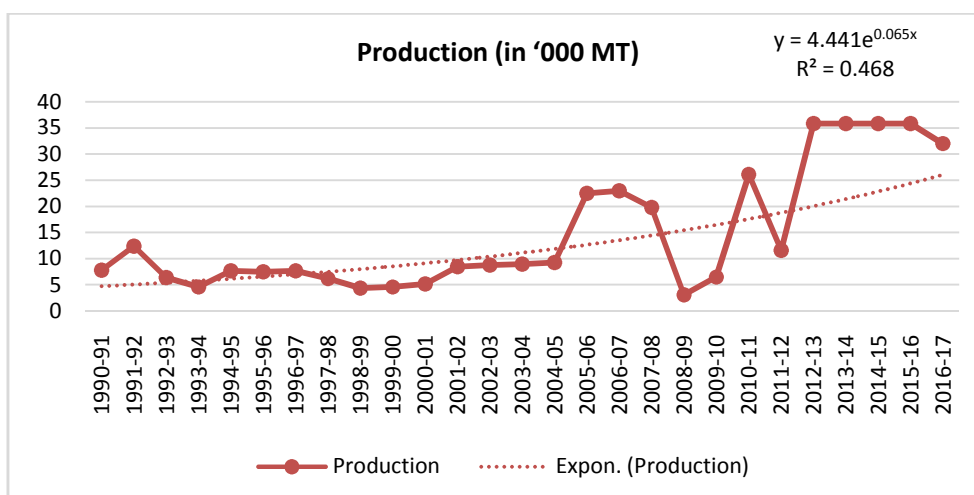


Fig-2 Trends of production in garlic in Haryana

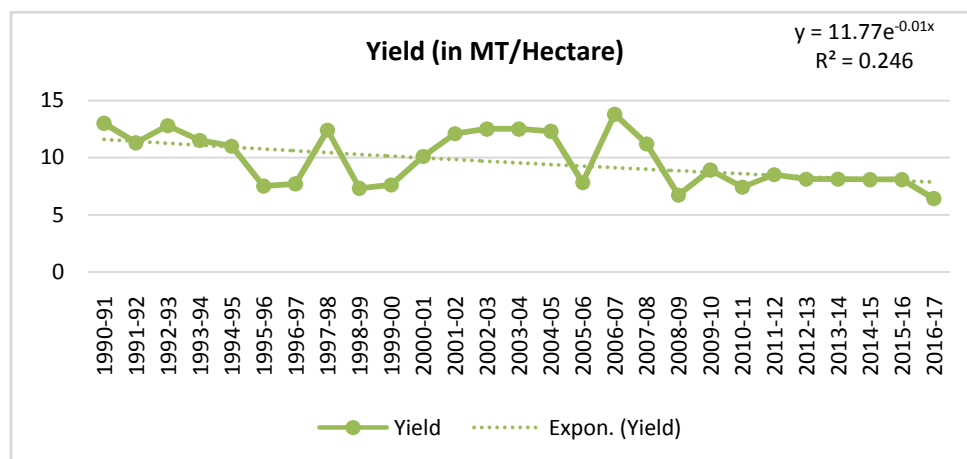


Fig-3 Trends of yield in Haryana

Growth trends in India

In India, area under garlic production was showing increasing trend. CGR of garlic in India was 5.19 per cent. Likewise, production of garlic shows a positive growth (6.62 %), and yield was also showing positive growth trend i.e. 1.41 per cent.

Table 2: Growth rate of garlic in India

Year	Area (in '000 Hectare)	Production (in '000 MT)	Yield (in MT/Hectare)
1990-91 to 1999-00	4.29	6.05	1.61
2000-01 to 2009-10	9.69	12.64	2.68
2010-11 to 2016-17	5.92	6.40	-0.21
1990-91 to 2016-17	5.19	6.62	1.41

As we see the decadal growth of the area of garlic, in 1990-91 to 1999-00, 2000-01 to 2009-10 and 2010-11 to 2016-17 it was positive i.e. 4.29, 9.69 and 5.92 %, respectively. In production, all the decadal growth of the garlic was positive. In case of yield, the decadal growth 1990-91 to 1999-00 and 2000-01 to 2009-10 was positive but in 2010-11 to 2016-17 it was negative.

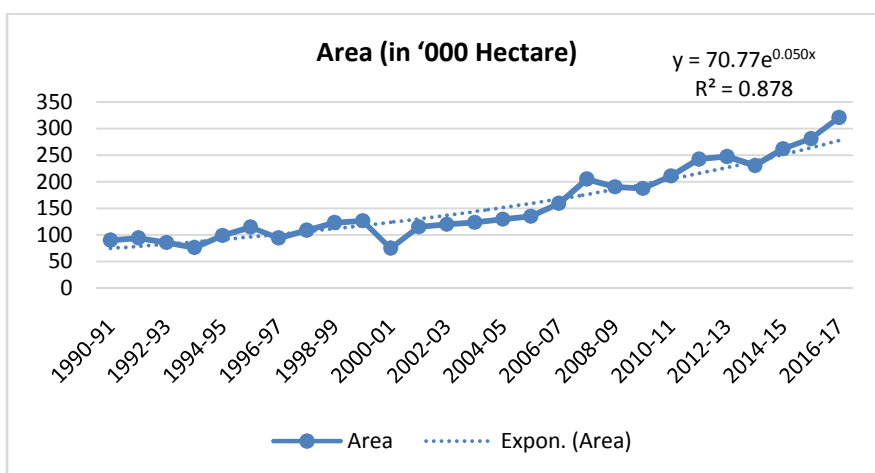


Fig-4 Trends of area in garlic in India

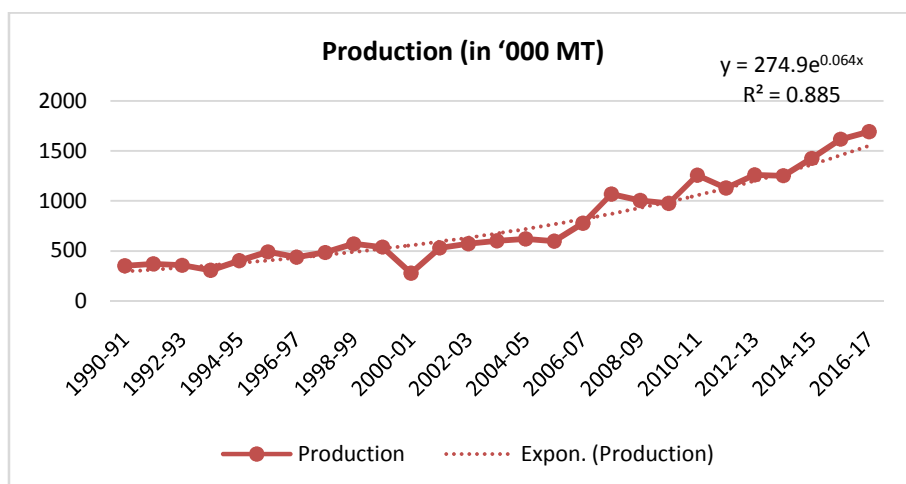


Fig-5 Trends of production in garlic in India

Maximum area in India under garlic was cultivated in 2016-17 i.e. 321 thousand hectares while minimum area under garlic was cultivated in 2000-01 which was 74.9 thousand hectares. In case of production, Maximum production of garlic in 2016-17 i.e. 1693 thousand metric tonnes. Maximum yield under garlic was taken in year 2010-11 i.e. Six metric tonne per hectare.

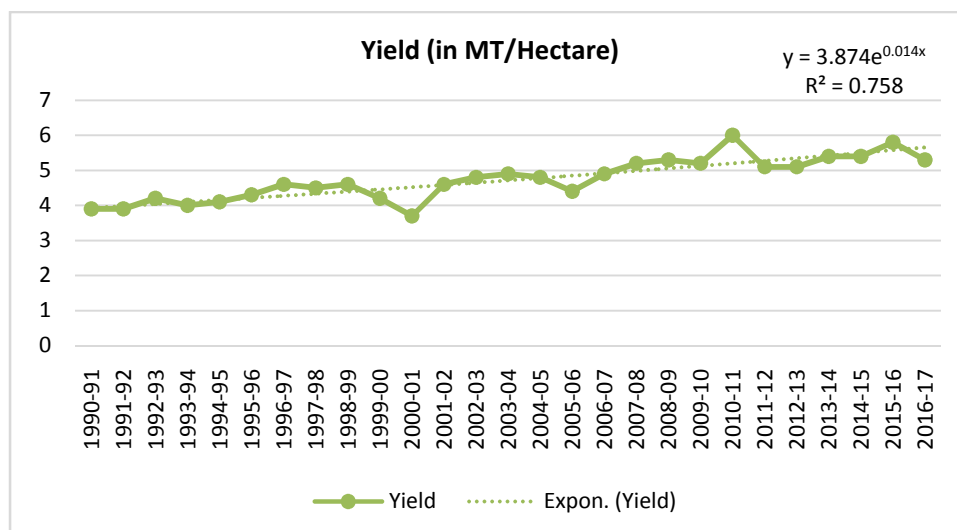


Fig-6 Trends of yield in India

CONCLUSION

This study was attempted to find out the growth and trends of area, production and yield of garlic in Haryana vis-à-vis India from the secondary data for a period from 1990-91 to 2016-17. This shows that the area and production growth trends in Haryana was positive while in yield growth trends was negative. But in case of India, the area, production and productivity trends are positive.

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