

**Research Article****TREND ANALYSIS OF AREA, PRODUCTION AND PRODUCTIVITY OF BANANA-DISTRICT KAUSHAMBI (U.P.)****Ruchi Sharma¹ and Wilson Kispotta²**¹Department of Agricultural Economics and Agri Business Management SHUATS, Allahabad, U.P²Director Extension Directorate of Extension SHUATS, Allahabad, U.P

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ABSTRACT

The availability of banana (*Musa paradissica L.*) fruits throughout the year, and due to the varying climatic and growing conditions in the country, India has become one of the major banana producing country in the world. Banana crop occupies a premiere position to give lump sum income to the farmer among irrigated cash crop and food crops in India. The present study was aimed to analyze the trends in area, production and productivity of banana crop on India and in district of Kaushambi in U.P. District Kaushambi is selected purposively because of banana cultivation in large scale and also due to better profitable cash crop. A time series data from 2001-02 to 2013-14(13 years) regarding the area, production and productivity of banana crop in India and to analyze the trends in district of Kaushambi a time series data from 2005-06 to 2010-11 (6 years) regarding the area, production and productivity of banana crop were collected. It is observed that for as many as 3 years the growth rate of India's banana cultivation area has been negative, for 3 years it has been less than 5 per cent and for 1 year, the growth has been registered over 18 per cent. Percent increase in area under banana in the district of Kaushambi is 9.51 from 2005-08 to 08-11 but the production has decreased by 26.38% while productivity is increasing as 1.3 %. Escalation in the input cost like water, fertilizers and quality planting material coupled with plant protection measures are the major limiting factors in improving the production of bananas.

The research priorities should be focused to achieve higher production and productivity with minimum cost of cultivation. Information related to trends in banana crop can aid the policy makers in recommending policies leading to sustainable increase in the production.

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INTRODUCTION

Banana is one of the important fruits of the world, especially of the tropics. It is often called as Apple of paradise. Banana accounts for the highest production among the fruits and contributes to 31% of the total production. In India it is cultivated in 802.6(000) hac. area with the total production of 29724.6(000) MT. It is the most popular fresh fruit all over the world and its name comes from the Arabic word 'banan', which means finger. Banana contains nearly all-essential nutrients including minerals and vitamins and has several medicinal properties. They are rich source of carbohydrates and potassium. These are the first choice of athletes owing to its high energy potential. Its high vitamin B6 content helps fight infection and is essential for the synthesis of 'heme', the iron containing pigment of hemoglobin. It is also a good source of phosphorous, calcium and magnesium. The fruit is easy to digest, free from fat and cholesterol. The fruit is a great source of fiber too. It is one of the oldest fruits known to mankind. Banana is one of the world's most important fruit crops. In India, banana crop accounts for 2.8% of agricultural GDP. It is an important fruit crop for subsistence farmers, and

ensures year round security for food and income. Considering the year round availability of fruits, unlike the seasonal availability of other fruits, it has become an inevitable necessity in any household in India for all functions. The bananas were grown in southern Asia even before the prehistoric periods and the world's largest diversity in banana population is found in this area. Hence, it is generally agreed that all the edible bananas and plantains are indigenous to the warm, moist regions of tropical Asia comprising the regions of India, Burma, Thailand and Indo china.

Objective of the study

The present study was undertaken to analyze the trends in area, production and productivity of banana grown in the district of Kaushambi (U.P.).

METHODOLOGY

The area selected for the present study is district Kaushambi in U.P. In 1997 new district namely Kaushambi has been formed covering some parts of Allahabad, which is called banana belt, the most favorable for producing best quality of banana. The district headquarter is Manjhanpur. District

Kaushambi comprises of 3 revenue sub division and 8 development blocks. The total geographical area of the district is 2012.8 sq. km. District Kaushambi is selected purposively because of banana cultivation in large scale and also due to better profitable cash crop. In order to approach the objective of the study a time series data from 2001-02 to 2013-14 (14 years) regarding the area, production and yield of banana crop in India were collected from Hand Book on Horticulture Statistics 2014, Government of India, Ministry of Agriculture, Department of Agriculture and Cooperation, New Delhi. To analyze the trends in district of Kaushambi, a time series data from 2005-06 to 2010-11 (6 years) regarding the area, production and yield of banana crop were collected from Horticultural Statistics, Indian Horticulture Production at Glance (1991-92 and 2001-02 to 2010-11).

Significance of the study

Fruits are protective foods and each adult individual should have 175 gms of the same in his daily diet (recommended by the ICMR). Banana not only promotes health of the population and better environment but also have high potential to generate economic betterment and employment too. An attempt has made under this paper to estimate growth rate of area, production and productivity of banana. The analysis was done at two levels viz. country and district level. This type of information gathered proves to be significant for the policy makers for developing their strategies.

LITERATURE REVIEW

R.P.Singh* and Nimmy Rani (2013) estimated growth rate of area, production and productivity of fruit crops in Jharkhand. The study revealed positive growth rate in all selected fruits (litchi, mango, guava and banana) except citrus. It has also been observed that among periods, IVth period (2005-10) was found to be favorable for litchi, mango and guava particularly, while negative growth rate was found in banana and citrus. The productivity growth rate was also observed to be positive nearly 2.56 percent, 2.56 percent, 1.50 percent, 5.21 percent respectively in litchi, mango, guava and banana. This trend resulted in positive growth in volume of these fruits in the state. The study further revealed that variability in area was highest in litchi (71 percent) due to shifting in area from other fruit crops in the litchi area followed by mango and banana respectively. Similarly variability in productivity was observed to be high in banana and there was no considerable variation in the yield of other fruit crops.

Kappa kondal (2014) analyzed the trends in the Indian horticultural sector; to study the instability of all horticulture crops in India and to examine the relationship between horticulture sector's area, production and horticulture sector exports from and import to India. There is a high and strong relationship between horticulture production and horticulture exports from India. In order to reduce the imports from abroad, to increase the area under the cultivation of horticulture crops and productivity through adopting modern technology is a pre-condition in Indian horticulture sector.

Saleem Abid et al. (2014) conducted a study with a view to analyzed growth and trend in area, production and yield of major crops of Khyber Pakhtunkhwa. A time series data from 1980-81 to 2011-12 (32 years) of major crops (wheat, maize, rice and sugarcane) were collected. The compound growth rate as well as trend analysis indicated that the area under wheat crop has decreased over the time due to shifting of area to other rabi crops. The production of wheat during 1981-85 to 2010-12 was increased due the corresponding increase in per hectare yield of wheat crop in Khyber Pakhtunkhwa. The results show that area, production and yield of maize was increased over the time the reason is that more area was brought under hybrid and improved open pollinated maize varieties. The area under rice crop has decreased whereas their production increased due the corresponding increase in per hectare yield of rice crop. It was revealed from the results that area, production and yield of sugarcane crop was increasing at a rate of 0.24 percent, 0.85 percent and 0.60 percent per annum, respectively.

Ramandeep Kaur M. Malhi, G. Sandhya Kiran (2015) analyzed the trends in area, production and yield of important crops viz. Cotton, Castor and Banana of India. A time series data from 2000-01 to 2011-12 (12 years) regarding the area, production and yield of these crops were collected. Cotton crop showed an increasing trend in area under crop at both country and state level while slight ups and downs were observed at district level. Production of cotton also showed overall increasing trend at state and district level. Area under Castor crop showed an increasing trend at country level and variations were found at state and district level. Its production also showed instability but on average increase was observed at state and district level. Yield of castor crop also showed variations but on average an increasing trend was observed. Area under banana crop showed variations on at all three levels. Its production showed annual instability at state level but overall decrease at district level.

Table 1 Area, production and productivity of banana in India

| Year | Area (in 000 hac.) | Area increase in % yearly) | Production (in 000 Mt) | % increase in production | Productivity (in MT/hac) | % increase in productivity |
|---------|--------------------|----------------------------|------------------------|--------------------------|--------------------------|----------------------------|
| 1991-92 | 383.9 | | 7790 | | 20.3 | |
| 2001-02 | 466.2 | 21.44 | 14209 | 80.41 | 30.5 | 50.24 |
| 2002-03 | 475.3 | 1.95 | 13304 | -6.37 | 28 | -2.5 |
| 2003-04 | 498.6 | 4.9 | 13856.6 | 4.15 | 27.8 | -0.71 |
| 2004-05 | 589.6 | 18.25 | 16744.5 | 20.84 | 28.4 | 2.15 |
| 2005-06 | 569.5 | -3.4 | 18887.8 | 12.8 | 33.2 | 16.9 |
| 2006-07 | 604 | 6.05 | 20998 | 11.17 | 34.8 | 4.81 |
| 2007-08 | 658 | 8.94 | 23823 | 13.45 | 36.2 | 4.09 |
| 2008-09 | 709 | 7.75 | 26217 | 10.04 | 37 | 2.2 |
| 2009-10 | 770.3 | 8.64 | 26469.5 | 0.96 | 34.4 | -7.02 |
| 2010-11 | 830 | 7.75 | 29780 | 12.5 | 35.9 | 4.36 |
| 2011-12 | 796.5 | -4.03 | 28455.1 | -4.44 | 35.7 | -0.55 |
| 2012-13 | 776 | -2.5 | 26509.1 | -6.83 | 34.2 | -4.2 |
| 2013-14 | 802.6 | 3.42 | 29724.6 | 12.12 | 37 | 8.18 |

Its yield also showed decreasing trend at district level

RESULT AND DISCUSSION

The details of banana production and increase or decrease in area, production and productivity over the previous year's along with the percentage increase /decrease in area, production and productivity in India are presented in Table 1.

The growth rate observed over the last 13 years of area of banana cultivation in India shows many ups and downs. Table 1 shows that for as many as 3 years the growth rate of India's banana cultivation area has been negative, for 3 years it has been less than 5 per cent and for 1 year, the growth has been registered over 18 per cent. During the year 2004-05 to 2005-06, 3.4 % area under banana was decreased but the production was higher by 12.8 % and productivity increased by 16.9 %. Period from 2011-13 showed fall in area, production and productivity too.

decreased by 6.26 %. From 2008-11 there is continuously increase in productivity.

The Table 3 and Figure 3 reveal that, during the 2005-08 the productivity is a mere 38MT per hectare. For 2010-11, the productivity is 41.5 MT per hectare. Thus out of the 6 years period, there is rise and fall in productivity. Out of the 6 years, 2 years has negative trend and the remaining 4 years show a positive trend. The failure of the rainfall at the appropriate times and occurrence of frost has caused the failure of crops and has reduced the productivity of banana considerably.

Percent increase in area under banana in the district of Kaushambi is 9.51 from 2005-08 to 08-11 but the production has decreased by 26.38% while productivity is increasing as 1.3 %.

Table 2 Increase in area, production and productivity of banana in India

| Year | Area (in 000 hac.) | Area increase in % (yearly) | Production (in 000 Mt) | % increase in production | Productivity (in MT/hac) | % increase in productivity |
|------------------|--------------------|-----------------------------|------------------------|--------------------------|--------------------------|----------------------------|
| 2001-02 to 03-04 | 480 | | 13789.86 | | 28.76 | |
| 2004-05 to 06-07 | 587.7 | 22.44 | 18876.76 | 36.88 | 32.13 | 11.71 |
| 2007-08 to 09-10 | 714.3 | 21.54 | 25503.17 | 35.1 | 35.87 | 11.64 |
| 2010-11 to 13-14 | 801.27 | 12.17 | 28617.2 | 12.21 | 35.7 | -0.47 |

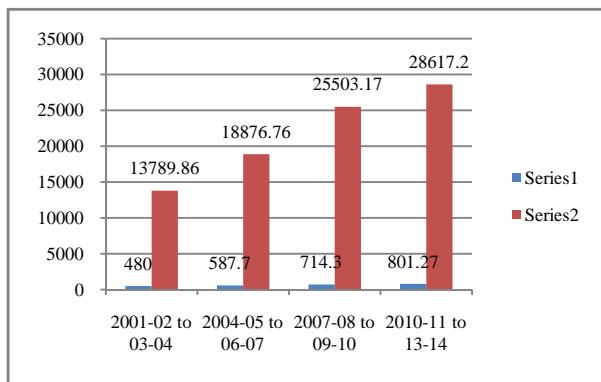


Figure 1 Increase in area, production and productivity of banana in India

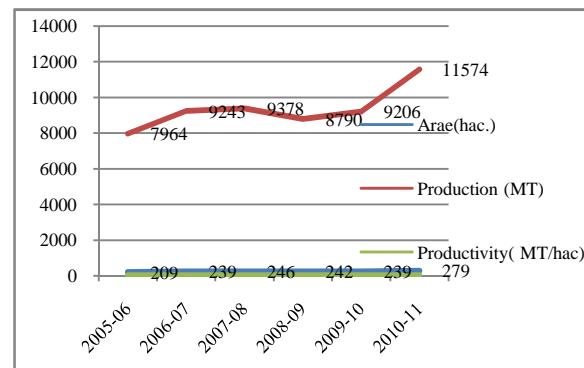


Figure 2 Area, production and productivity of banana in district Kaushambi

In the district of Kaushambi, the area, production and productivity of banana and annual change during 2005-06 to 2010-11 are presented in Table 3.

Table 3 Area, production and productivity of banana in district Kaushambi

| year | Arae(hac.) | % increase in area | Production (MT) | % increase in production | Productivity(MT/hac) | % increase in productivity |
|---------|------------|--------------------|-----------------|--------------------------|-----------------------|----------------------------|
| 2005-06 | 209 | | 7964 | | 38.1 | |
| 2006-07 | 239 | 14.35 | 9243 | 16.05 | 38.7 | 1.49 |
| 2007-08 | 246 | 2.92 | 9378 | 1.46 | 38.1 | -1.42 |
| 2008-09 | 242 | -1.62 | 8790 | -6.26 | 36.3 | -4.72 |
| 2009-10 | 239 | -1.23 | 9206 | 4.73 | 38.5 | 6.02 |
| 2010-11 | 279 | 16.73 | 11574 | 25.72 | 41.5 | 7.72 |

Table 4 Increase in area, production and productivity of banana in district Kaushambi

| year | Arae(hac.) | % increase in area | Production (MT) | % increase in production | Productivity(MT/hac) | % increase in productivity |
|------------------|------------|--------------------|-----------------|--------------------------|-----------------------|----------------------------|
| 2005-06 to 07-08 | 231.33 | | 8861.66 | | 38.3 | |
| 2008-09 to 10-11 | 253.33 | 9.51 | 6523.33 | -26.38 | 38.8 | 1.3 |

Table 3 shows during 2007-10 there is slight decrease in area from 246 hac to 239 hac. During 2007-09 production was

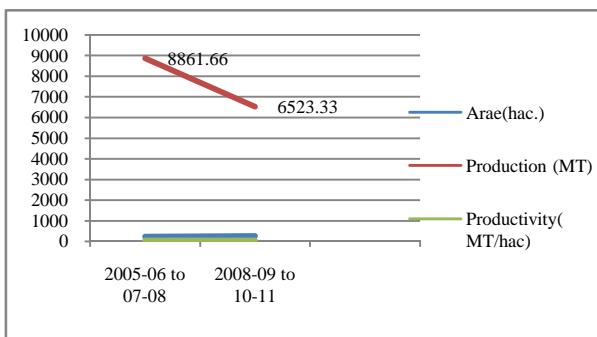


Figure 3 Increase in area, production and productivity of banana in district Kaushambi

Suggestions

- Emphasis should be given for collection of genetic diversity and identification of resistant gene sources using advanced biotechnological tools. Technology for increasing the efficiency for water and nutrient use with better cropping system has to be evolved.
- Priority should be given to high yielding bananas with resistance to major biotic stresses.
- Escalation in the input cost like water, fertilizers and quality planting material coupled with plant protection measures are the major limiting factors in improving the production of bananas.
- The research priorities should be focused to achieve higher production and productivity with minimum cost of cultivation.

- The government can solve the problem of lack of quality suckers by supplying quality suckers to the banana cultivators in order to secure the right type of suckers for the production of banana.
- Training facilities for farmers are essential to increase the awareness and providing them technical knowhow.
- To built air conditioned warehouses where farmers can store their harvested bananas while waiting for the market to pick up again. This can be done cheaply by using solar energy since there is abundant sun light in the region.
- Banana farmers association and cooperatives should be formed which will enable them to pool resources together.

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