

Growth Of Pineapple Culture Spatio Temporal Analysis in Karnataka

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ABSTRACT: The pineapple (*Ananas Comosus*), grown in over a third of the world, is one of the most significant tropical and subtropical fruits. India's primary growing season is from July to September, and it takes nearly 18 to 24 months for crops to mature enough to be harvested. This paper's major goal is to examine the temporal rise in pineapple production, area, and productivity, or yield, in Karnataka. The data series of pineapple's spatiotemporal growth spans the years 2011–2012 through 2020–21. The results of this study showed that over the course of the last ten years, area expanded from 71.3 to 109.83 (000 hectare), production climbed from 1071.32 to 1924.22 (000 MT), and productivity increased from 15 to 17.52 (MT/hectare). The percentage increases in pineapple production, area, and productivity during the past ten years have been 54.04, 79.36, and 16.8, respectively.

Keywords: Pineapple, growth, area, Karnataka

INTRODUCTION:

The scientific name for pineapple, *Ananas Comosus*, comes from the Tupi word "nanas," which means "good fruit" and is a member of the Bromeliaceae family. This fruit is naturally very tasty and has great flavour and nutritional content. Although it goes by a variety of regional names, including Keehom in Manipur, Ananus in Marathi, Annasahannu in Kannada, Anasipazham in Tamil, Kaitachchakka in Malayalam, etc., it is recognised as *Ananas* in nearly every region of India. It is a strong source of vitamins A and B and is high in vitamin C. It has a unique enzyme called "Bromelin" that aids in the digestion of protein (1). The edible pineapple has a high nutritional value, providing 50 K calories, 0.54 gm protein, 58% vitamin C, 44% manganese, 86% water, and 13% carbohydrate per 100 g. The anti-inflammatory characteristics strengthen the immune system, and it is filled with a range of vitamins and minerals that contain disease-fighting antioxidants that lower the risk of developing chronic diseases including heart disease, diabetes, and cancer. Due to India's large population, most of the pineapples produced are consumed by Indian citizens, with the very least amount being shipped to the Middle East and Western nations. The flesh of the pineapple is used as food and animal feed after the juice has been extracted. In addition to these, pineapple is used to make jam, jelly, squash, vinegar, alcohol, etc. Ripe pineapple is the most perishable fruit of all; it cannot be stored for longer than 3–4 days after harvest. Different pineapple types are grown worldwide, including in India. Around 80–90 different pineapple cultivars are grown throughout the world. In India, the following pineapple cultivars are the most common: Kew, Giant Kew, Queen, Mauritius, Jaldhup, Lakhat, Amrutha, and MD-2. They are grown in different states of India throughout various seasons due to their various types, but the major growth season for the entirety of India is from July to September. A humid tropical climate that is neither too hot nor too cold is best for pineapple cultivation. The best temperatures for its growth are between 15 and 30 degrees Celsius, and more specifically, 22 to 24 degrees Celsius. 500 to 5500 mm of rain fall occur annually, while 700 to 1500 mm is preferable. According to Chinzakhum, pineapple production requires soil that is somewhat acidic and has a pH between 5.5 and 6.0. It can be successfully grown up to 1500 metres above mean sea level. After citrus and banana, it is the third-most significant tropical and sub-tropical fruit. This plant is native to South America, specifically between Paraguay and southern Brazil, where it is said to have originated. According to MS-Bertone, the Parana-Paraguay River is where the pineapple originated. In India and the rest of the world, there are respectively 1.1 lakh and 10.98 lakh hectares under cultivation for pineapple.

LITERATURE REVIEW:

Sukhen Chandra Das (2011) Pineapple cultivation in Hilly Tripura with year around production: Improving livelihood opportunities in rural areas of Tripura, Pineapple (*Ananas comosus* L.) is a natural fruit in the state with favorable sub-tropical agro-climatic conditions, fertile slightly acidic soil, and abundant rainfall. The undulating tilla land with varying degrees of slope are highly susceptible to erosion so practices to check soil erosion are vital. 'Queen' and 'Kew' ('Smooth Cayenne') are the main cultivars grown in different parts of Tripura. The area under pineapple cultivation is 5,180 ha and production are 1.06 million t with 'Queen' being the most popular for fresh consumption and occupying the largest area. Pineapple does not flower uniformly even after physiological maturity so 80% of pineapple fruit are harvested within only 2-3 months (May-June-July), resulting in a huge market glut in almost all markets of the state.

Parvej Alam (2020) Growth of Pineapple Cultivation: A Spatio-Temporal Analysis in India, Pineapple (*Ananas Comosus*) is one of the most important tropical and sub-tropical fruit of Bromeliaceae family, cultivated almost one third part of the world. July to September is the main growing season in India and it takes almost 18-24 months to mature for harvesting. The main objective of this paper is to analyse the temporal growth in area, production and productivity or yield of pineapple in India. The data series of spatiotemporal growth of pineapple is incorporated from 1995-96 to 2015-16. The finding of this paper revealed that the area increased from

71.3 to 109.83 (000 hectare), production 1071.32 to 1924.22 (000 MT) and productivity 15 to 17.52 (MT/hectare) in the last two decades. Over the last twenty years the percentage of growth in area, production and productivity of pineapple are 54.04, 79.36 and 16.8 respectively. The study also revealed that Assam has the largest area under pineapple cultivation, West Bengal is the leading producer and Karnataka is the largest in productivity.

Chinnu, Dr. C. Sivakkolundu (2021) A Study on Production and Marketing of Pineapple in Kolli Hills, Namakkal District India is the second largest producer of fruits (44 million tonnes) and vegetables (87.5 million tonnes) with a unique position in fruits like mango, litchi, banana, pineapple, sapota and grapes. India's share in the world production is about 10.1 per cent in fruits and 14.4 per cent in vegetables. The future of the Indian farmers depends on the success of the agriculture sector as India's prosperity is predominantly linked to the growth in income in the agrarian sector of the economy. India has been bestowed with wide range of climate and physio geographical conditions and as such is most suitable for growing various kinds of horticultural crops. Pineapple is the most important American fruit, and the third most important tropical fruit, after banana and mango citrus fruits being produced mainly in subtropical areas. It is cultivated in all tropical and subtropical countries.

OBJECTIVES OF THE STUDY:

The main objectives of this study are:

- To study the Spatio-temporal growth of area, production and productivity of pineapple in Karnataka.
- To highlight the present status of pineapple cultivation in Karnataka.

DATABASE:

The present paper is mainly based on secondary sources of data and the time period is from 2011-12 to 2020-21 i.e., one decade. The Department of Agriculture, Cooperation and Farmers Welfare, the Horticultural Statistics Division, the Food and Agricultural Organization (FAO), the National Horticulture Board of India (NHB), the Statistical Fact Book, the Agriculture and Processed Food Products Export Development Authority (APEDA), the District Statistical Handbook, the State Statistical Book, among other sources, were the primary secondary sources of data. They were also retrieved from indiastat.com, westbengalstat.com, and [fao](http://fao.org). In addition to them, descriptive and numerical data were gathered for the topic from several national and international publications, PhD theses, articles, projects, and reports.

METHODOLOGY:

The gathered secondary data was then analysed, manually tabulated, diagrammed, and the outcomes were presented using Microsoft Word 2010 and Excel 2010. With the aid of Arc GIS software 10.2, maps of the research region, or the production, are created, and their distribution is depicted in a straightforward bar diagram on the map. Appropriate statistical approaches have been applied in order to analyse the secondary data that has been gathered. Statistical tools like share of percentage and average annual growth rate are used to illustrate the growth rate of the pineapple crop in Karnataka in terms of area, production, and productivity. The average annual growth rate being AAGR.

$$AAGR = \frac{\text{End Value} - \text{Starting Value}}{\text{Starting Value}} \times 100$$

$$\frac{\text{Starting Value}}{N}$$

Where, AAGR= Average Annual Growth Rate

RESULTS AND DISCUSSION:

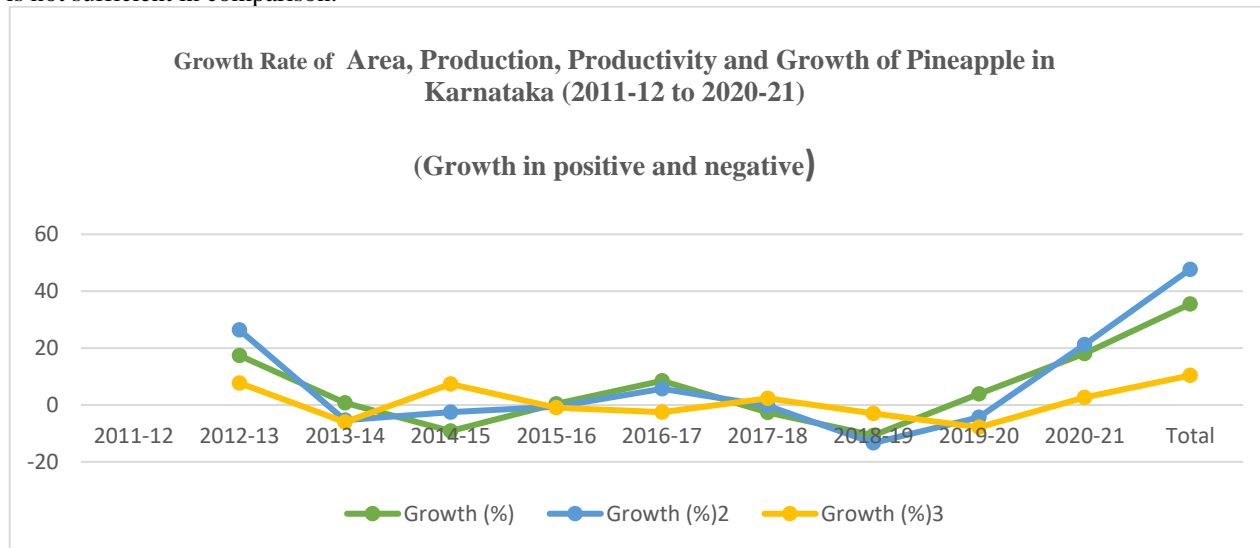
Area, Production, Productivity and Growth of Pineapple in Karnataka

Table-1: Area, Production, Productivity and Growth of Pineapple in Karnataka (2011-12 to 2020-21)

Year	Area (000 Hect.)	Growth (%)	Production (000 MT)	Growth (%)	Productivity (MT/Hect.)	Growth (%)
2011-12	2.3		133.9		58.21	
2012-13	2.7	17.39	169.3	26.43	62.70	7.70
2013-14	2.72	0.74	160.31	-5.31	58.93	-6.00
2014-15	2.47	-9.19	156.31	-2.49	63.28	7.37
2015-16	2.48	0.40	155.41	-0.57	62.66	-0.97
2016-17	2.69	8.46	164.26	5.69	61.06	-2.55
2017-18	2.62	-2.60	163.73	-0.32	62.49	2.34
2018-19	2.34	-10.68	141.86	-13.35	60.62	-2.98
2019-20	2.43	3.84	135.74	-4.31	55.86	-7.85
2020-21	2.87	18.10	164.61	21.26	57.35	2.67
Total	-	35.49	-	47.70	-	10.38
AAGR	-	2.23	-	2.08	-	-0.14

Source: National Horticulture Board of India

In terms of area under pineapple cultivation, Karnataka is the third-largest producer in India, producing 155.41 thousand metric tonnes out of the country's total production of 7665.42 (000 MT) (FAO, 2021). According to the study, in the last ten years—between 2011–12 and 2020–21—Karnataka produced 164,61 thousand metric tonnes more pineapples than it did in the previous year, or 133.9 thousand metric tonnes. Production increased by a total of 47.70% between 2011–12 and 2020–21, nearly doubling it, and at an average annual growth rate of 2.08%. Similar to this, between 2011–12 and 2017–18, pineapple production climbed from 15 to 17.52 metric tonnes per hectare and its total area from 71.3 to 109.83 thousand hectares. Area and productivity both increased overall by 2.3 and 2.62 percent, respectively. Both have average yearly growth rates of 58.21 and 62.49 percent (table-1). The area and production have both increased steadily, while productivity growth has been nearly constant. Production showed the largest positive growth (26.43%) and the highest negative growth (0.32%) in the years 2012–13 and 2017–18, respectively. The year 2020–21 shows the highest positive growth in terms of area (21.26%) and productivity (57.35%). Therefore, the production rate is 2.08%, the yield per hectare is -0.14%, and the compound growth rate of area is 2.23%. As a result, there is an upward tendency in both area and output, but the yield per hectare is not sufficient in comparison.



SUGGESTION:

- Based on the secondary data the suggestion regarding the increase in production of Pineapple are adoption of urea to increase the weight.
- Subsidy should be given to the export of Pineapple.
- High density cropping is recommended for pineapple cultivation.

CONCLUSIONS & RECOMMENDATIONS:

The acreage, production, and productivity of pineapple in Karnataka have grown at a noticeably slower rate during the past one decade, according to the statistics presented above. In the Karnataka district of Shimoga, the area under pineapple plants is growing at a very rapid rate. In Karnataka, production has climbed three to four times as quickly, but pandemic-related production growth is expected to be negative in 2019–20. In south Indian states like Kerala and Karnataka, pineapple production and productivity are currently performing better. The study also showed that Karnataka has the most land planted in pineapples and that Shivamogga district is the state's top producer. The significant differences in pineapple productivity between different districts are primarily the result of poor farm management practises, such as the use of fewer pesticides, chemical fertilisers, and suckers, as well as a lack of knowledge and insufficient use of other inputs, all of which lead to lower production and productivity.

Therefore, producers must adapt and implement better modern management strategies that are already being used in higher productivity states like Karnataka in order to increase productivity and pineapple production. The government should give financial aid to pineapple growers so they can buy fertiliser and pesticides when they are needed, give them periodic training, and set up "Krishi mela" events to educate the farmers about the benefits of boosting production, which will boost Indian prosperity.

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