



International Journal of Research in Agronomy

E-ISSN: 2618-0618

P-ISSN: 2618-060X

© Agronomy

www.agronomyjournals.com

2024; 7(8): 333-336

Received: 22-06-2024

Accepted: 27-07-2024

Akash Tiwari

Ph.D. Scholar, Department of
Agricultural Economics, CoA,
IGKV, Raipur, Chhattisgarh,
India

Dr. VK Choudhary

Professor and Head, Department
of Agricultural Economics, CoA,
IGKV, Raipur, Chhattisgarh,
India

Nileema Pandey

Department of Floriculture and
Landscape, CoA, IGKV, Raipur,
Chhattisgarh, India

Suryakant Choubey

PG Scholar, Department of
Agricultural Extension, CoA,
IGKV, Raipur, Chhattisgarh,
India

Analysis on area, production and productivity of basmati rice in India

Akash Tiwari, Dr. VK Choudhary, Nileema Pandey and Suryakant Choubey

DOI: <https://doi.org/10.33545/2618060X.2024.v7.i8e.1275>

Abstract

The complete set of data used for the study comes from secondary sources and spans the years 1988–1989 through 2017–2018. Period I (1988–89 to 2002–03), Period II (2003–04 to 2017–18), and the overall Period (1988–89 to 2017–18) comprise it. In Period I, the CGR of the total national export was 19%, while in Period II, it was 15.09 percent. In Period I, the percentage of total agricultural export with a CGR of 16.97% was recorded, while in Period II, it was 16.46%. The percentage CGR of the total basmati export was 16.96 percent in Period I and 22.63 percent in Period II area. Area planted to basmati rice had a CGR of 5.77% in Period II compared to 5.76% in Period I. The area's CGR for basmati rice production in Period I was 6.04 percent, while in Period II it was 9.01 percent. The area's CGR of basmati rice productivity in Period I was 0.25 percent, whereas in Period II it was 1.24 percent. In Period I, the CGR of the basmati rice export quantity was 8.72%, while in Period II, it was 13.64 percent. In Period I, the percentage of CGR export value of basmati rice was 16.96%, whereas in Period II, it was 22.63%. In Period I, the percentage CGR of unit export value of basmati rice was 7.58%, while in Period II, it was 79.1%.

Keywords: Basmati rice, compound growth rate, area, production and productivity

Introduction

Rice (*Oryza sativa*) is a staple food that provides approximately 20% of the world's average caloric intake, cultivated on around 11% of global agricultural land. With a record production of 984 million tons in 2017 (FAOSTAT 2019), rice plays a vital role in ensuring food and nutrition security worldwide.

The significance of rice is encapsulated in the theme "Rice is life," highlighting its importance as a primary food source and income generator, particularly in developing countries. In India, rice accounts for nearly half (44%) of total food utilization and occupies around a quarter (23%) of the country's total cropped area. The production of rice has far-reaching implications for food security, both in India and globally, underscoring its status as a critical food crop influenced by industrial developments.

Basmati Paddy, a premium product from the Himalayan foothills of India, is renowned for its exceptional quality and aroma, making it a sought-after food item in international exports from India. As one of the largest exporters of rice, India ships approximately 10-13 million tons of basmati rice annually. In the fiscal year 2018-19, India exported 11.9 million tons of rice, comprising 4.4 million tons of basmati rice and 7.5 million tons of non-basmati rice. The share of basmati rice in total rice exports has fluctuated between 30% and 40%, while non-basmati rice accounts for 60% to 70% of the trade. Indian rice is exported to around 132 countries worldwide, with major destinations including Iran, Saudi Arabia, the UAE, and Iraq.

Objectives

1. To estimate growth in area, production and productivity of Basmati Rice.

Methodology

This research was based on the secondary data. The data were collected from various government sources like, Ministry of Commerce & Industry- Government of India, Agri

Corresponding Author:

Akash Tiwari

Ph.D. Scholar, Department of
Agricultural Economics, CoA,
IGKV, Raipur, Chhattisgarh,
India

Indiastat, DAC & FW, Directorate of Economics & Statistics, FAOStat (Food and Agricultural Organization), APEDA (Agricultural and Process Food Products Export Development Authority) and Agmarknet etc.

Growth rates analysis

To arrive at normal years, a simple average of estimate for thirty years from 1988-89 to 2017-18 have been taken. The normal year was used as the base year for calculating growth rates, serving as a reference point for estimating changes and trends in subsequent years. We take Time as the independent variables and the Area, Production, Productivity and their respective values of the Basmati Rice as the dependent variables, the compound growth rates were estimated by using following exponential growth function.

$$Y = ab^t$$

Where,

Y = Area/Production/Productivity/Export quantity/export value/Unit value of Basmati Rice production.

t = Time variable

b = Regression coefficient

a = Intercept

Results and Discussion

Compound Growth Rate (CGR) of total national, agricultural and basmati rice export

It is observed from the table 1 that the compound growth rate (CGR) in India's total export of basmati rice were year to year from 1988-89 to 2017-18. It is divided in to two Periods, Period - I (1988-89 to 2002-03), Period - II (2003-04 to 2017-18) and overall Period (1988-89 to 2017-18).

The percent CGR of total national export in the Period - I was 19 percent and in Period - II area was 15.09 percent. The percent CGR of total national export in the overall Period was 17.52 percent.

The percent CGR of total agricultural export in the Period - I was 16.97 percent and in Period - II area was 16.46 percent. The percent CGR of total agricultural export in the overall Period was 15.34 percent.

The percent CGR of Total Basmati Export in the Period - I was 16.96 percent and in Period - II area was 22.63 percent. The percent CGR of Total Basmati Export in the overall Period was 17.65 percent.

Table 1: Compound Growth Rate (CGR) of total national, agricultural and basmati rice export

Periods	Total national export	Total agricultural export	Total basmati export
Period – I	19.00*	16.97*	16.96*
Period – II	15.09*	16.46*	22.63*
Overall period	17.52*	15.34*	17.65*

Note: * - denotes significant at 5% level

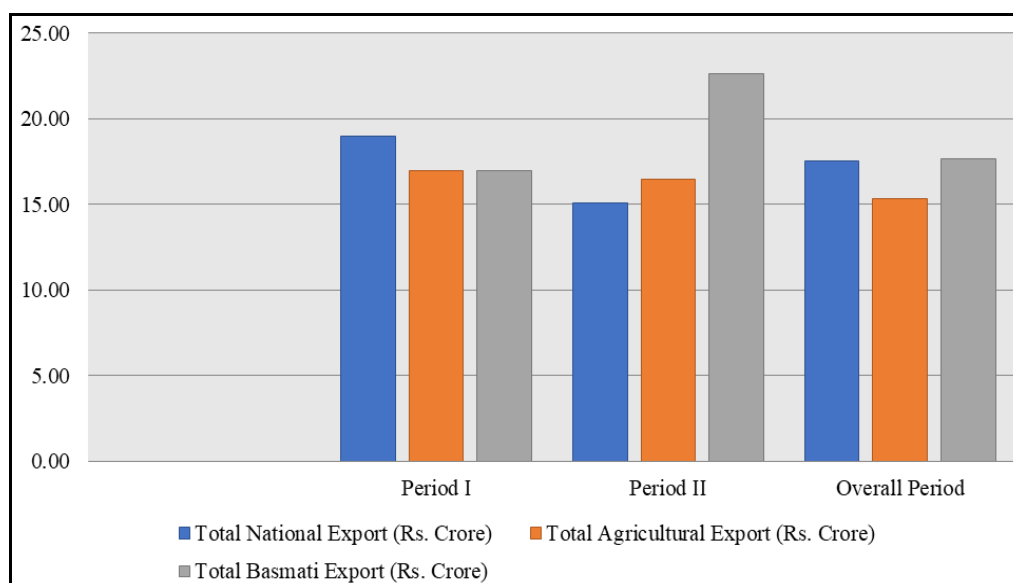


Fig 1: Compound Growth Rate (CGR) of total national, agricultural and basmati rice export

Compound Growth Rate (CGR) of area, production and productivity of Basmati Rice in India

Data was collected for the computation of Compound Growth Rate (CGR) of Basmati Rice in India, from 1988-89 to 2017-18. It is divided in to three Periods, Period - I (988-89 to 2002-03), Period - II (2003-04 to 2017-18) and overall Period (1988-89 to 2017-18).

The CGR of area of basmati rice in the Period - I was found 5.76 percent and in Period - II area was 7.67 percent. The percent CGR of area of basmati rice in the overall Period was 5.45 percent. All the above CGR are significant at 5% level of significance.

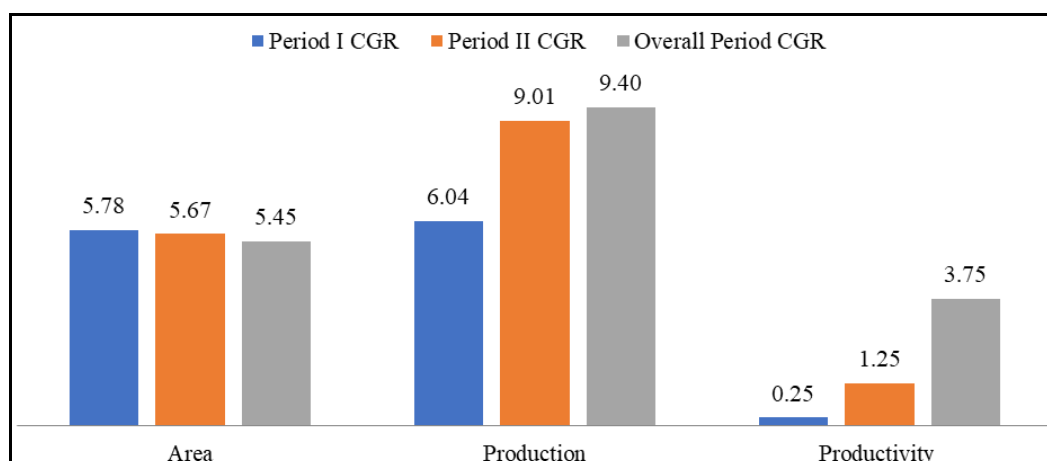
The percent CGR of Production of Basmati Rice in the Period – I, was 6.04 percent and in Period – II, area was 9.01 percent. The percent CGR of production of basmati rice in the overall Period was 9.40 percent. The CGR percent in basmati rice is significant at 5% level of significance.

The CGR of Productivity of Basmati Rice in the Period – I, was 0.25 percent and in Period – II, area was 1.24 percent. The percent CGR of productivity of Basmati Rice in the overall Period was 3.75 percent. Productivity of Period – I, was recorded non - significant at 5% and Period - II and Overall Period are significant at 5%.

Table 2: Compound Growth Rate (CGR) of area, production, productivity Basmati Rice in India

Periods	Area (in percent)	Production (in percent)	Productivity (in percent)
Period – I	5.78*	6.04*	0.25#
Period – II	7.67*	9.01*	1.24*
Overall Period	5.45*	9.40*	3.75*

* - denotes significant at 5% level

**Fig 2:** Compound Growth Rate (CGR) of area, production productivity Basmati Rice in India

Compound Growth Rate (CGR) of export quantity, export value and unit value of basmati export

The CGR of export quantity of basmati rice in the Period - I was 8.72 percent and in Period - II area was 13.64 percent. The percent CGR of export quantity of basmati rice in the overall Period was 11.03 percent. All the above CGR are significant at 5% level of significance

The percent CGR export value of basmati rice in the Period - I was 16.96 percent and in Period - II area was 22.63 percent. The

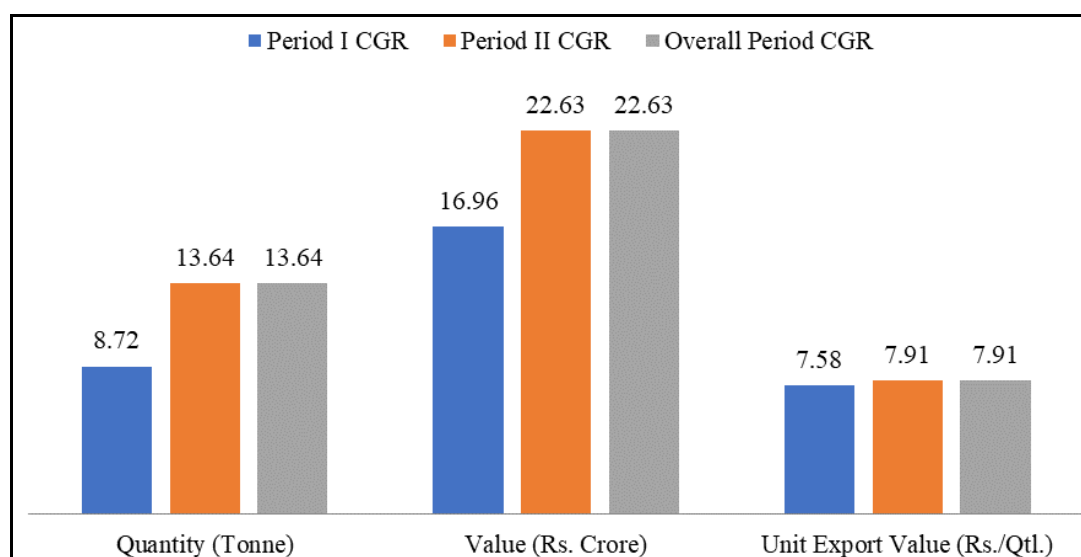
percent CGR of export value of basmati rice in the overall Period was 17.65 percent. The CGR percent for export value of basmati rice is significant at 5% level of significance.

The percent CGR of unit export value of basmati rice in the Period - I was 7.58 percent and in Period - II area was 7.91 percent. The percent CGR of unit export value of basmati rice in the overall Period was 5.96 percent. Unit export value for all the Period significant at 5% level of significance.

Table 3: Compound Growth Rate (CGR) of export quantity, export value and unit value Basmati Rice in India

Periods	Export Quantity (in percent)	Export Value (in percent)	Unit Export Value (in percent)
Period – I	8.72	16.96	7.58
Period – II	13.64	22.63	7.91
Overall Period	11.03	17.65	5.96

All CGR values are significant at 5% level

**Fig 3:** Compound Growth Rate (CGR) of export quantity, export value and unit value Basmati Rice in India

Conclusion

This comprehensive study provides valuable insights into the growth trends of Basmati rice in India, covering area, production, productivity, export quantity, export value, and unit value. The analysis reveals significant compound growth rates across all parameters, indicating a robust performance of the Basmati rice sector.

The study highlights the importance of Basmati rice as a vital food crop and a substantial contributor to India's agricultural exports, with a significant share in global trade. The findings demonstrate that India's Basmati rice industry has shown remarkable resilience and growth over the years, driven by factors such as increasing demand, improved production practices, and effective marketing strategies.

The results of the study have important implications for policymakers, farmers, and industry stakeholders. They can inform evidence-based decisions and strategies to:

- Enhance production and productivity
- Expand export markets and increase global competitiveness
- Develop sustainable practices and address climate change challenges
- Improve supply chain efficiency and reduce losses
- Support small-scale farmers and promote inclusive growth

Overall, this study contributes to a deeper understanding of the Basmati rice sector's dynamics and provides a foundation for future research and policy interventions to ensure the long-term sustainability and growth of this critical agricultural sector.

References

1. Adhikari A, Sekhon MK, Kaur M. Export of Rice from India: Performance and Determinants. *Agric Econ Res Rev*. 2016;29(1):135-150.
2. Ajjan N, Vaseeharan SS, Ranganathan C, Raveendaran N. An economic analysis of export performance of senna and periwinkle in India. *Indian J Agric Econ*. 1998;53(1-2):88-99.
3. Buckewell AE, Shucksmith DM, Young DA. Structural projections of the Scottish dairy industry using micro and macro-Markov transition matrices. *J Agric Econ*. 1983;34(1):57-68.
4. Chahal HS. Production and export potential of basmati rice in Indian Punjab. *Hry Eco Jr*. 2004;24(1-2):102-105.
5. Dutta SK. India's trade prospects for rice. In: Chand R, Hague T, editors. *Vision of India's rice trade*. New Delhi: NCAP; 1996. p. 14-35.
6. Government of India. Price policy for kharif crops-The marketing season 2012-13. New Delhi: Commission for Agricultural Costs and Prices, Ministry of Agriculture; c2012.
7. Government of India. *Agricultural Statistics at a Glance 2013*. New Delhi: Ministry of Agriculture; c2013.
8. Government of India. *Agricultural and Processed Food Products Export Development Authority (APEDA)*. New Delhi: Ministry of Commerce and Industry; 2013 [cited 2024 Aug 9]. Available from: <http://agriexchange.apeda.gov.in>.
9. Joshi D, Singh HP, Gurung B. Stability Analysis of Indian Spices Export-A Markov Chain Approach. *Econ Aff*. 2015;60(2):257-262.
10. Joshi PV, Milind B, Bhujbal, Belanekar SB. Trends in area, production, productivity and export of rice from India. *Int Res J Agric Econ Stat*. 2012;3(1):99-105.
11. Leelavathi C, Reddy VK, Naidu B. An Econometric Analysis of Agricultural Trade in Rice Crop of Andhra Pradesh. *J Int Acad Res Multidiscip Impact Factor*. 2014;2(5):597-608.
12. Mellor CJ. An application and extension of the Markov Chain model to cereal production. *J Agric Econ*. 1984;35(2):203-218.
13. Nethrayini KR, Vinod R, Naik MHB, Siddayya S. Export Performance of Rice in India. *J Agric Sci*. 2012;6(4):125-133.
14. Nguyen C, Baldeo S. Trend in Rice Production and Export in Vietnam. *Omonrice*. 2006;14:111-123.
15. Raghuram G, Asopa VN. Issues in Infrastructure for Export of Rice from India. IIMA Working Papers No WP2008-07-03. 2008. p. 1-63.
16. Rangi PS, Sidhu MS. WTO vis-à-vis export of basmati rice from India. *Indian J Agric Mark*. 2001;Conf Spl:113-119.
17. Sadavatti PM. Export of basmati rice and its stability: Markov chain analysis. *Indian J Agric Mark*. 2006;20(1):11-18.
18. Sadavatti PM. Export Prospects of Indian Basmati Rice: Cointegration and Error Correction Approach. *Agric Mark*. 2007;21(3):31-35.
19. Thumar VM, Khunt KA, Thanki PM, Kumar K. Growth and export performance of major seed spices of India. *Indian J Agric Mark*. 2012;26(1):21-35.
20. Velmurugan M, Velavan C, Sivakumar SD. Growth, instability, and structural changes of non-basmati rice exports from Tamil Nadu ports. *Arthshastra Indian J Econ Res*. 2016;5(4):11-19.