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MINOR MILLETS IN TRANSITION: TRENDS IN CULTIVATION, PRODUCTION AND PRODUCTIVITY IN INDIA AND TAMIL NADU

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ABSTRACT----------
Around the world, millets, a kind of small-seeded cereal crop or grain, are widely grown for food and fodder. Throughout history, millet has been an important staple crop, especially in the scorched tropical regions of Asia and Africa that are poor. Over 97 types of millets are produced in developing countries. Productivity and short growing season under dry, high-temperature conditions favours millet crops that in turn attracts preferability from the farming group. Most millets, also referred to as coarse cereals, are produced in India. The main objective of this paper is to assess the fluctuations and impact of the productivity, production, and area under cultivation of small millets in Tamil Nadu and throughout India by analysing the time series data from 1950–1951 to 2021–2022. Compound Growth Rate and Compound Annual Growth Rate were used for the analysis. The findings showed that while area coverage is negative and non-significant because of development of high yielding varieties, practice of line sowing and other cultivation practices lead to the increased yield with minimum land occupancy, so that the production and productivity for Tamil Nadu's small millets are positive and substantial.
KEYWORDS: *Small Millets, Time-Series, CGR, High Yielding Varieties, Line Sowing----------*

INTRODUCTION

A family of very varied small-seeded grasses known as millets are commonly grown in the dryland tropical regions of Asia and Africa. More than 97 percent millets production are produced in poor nations. Millet crops are more productive and have a shorter growing season in dry and warm weather, which makes them desirable to farmers. Since independence, one of India's main problems has been malnutrition. India is ranked 64 out of 81 countries in Global Hunger Index, yet despite this, a sizable portion of the population experiences malnutrition and shortages in some micronutrients, and the country is seeing an increase in the prevalence of obesity and chronic illnesses including diabetes, heart disease, cancer, and other conditions. According to Food and Agriculture Organisation (FAO) published the data on the area, yield and production of minor millets. India accounts for a substantial portion of the world's millet area 88,00,000 hectares with a proportion of 28.1 percent. With 1,14,20,000 tons produced, it ranks first in terms of output as well and accounts for 41 percent of global production. According to the 2016 Season and Crop Report, the area of small millet has decreased by 80 percent, that of finger millet by 46 percent, that of sorghum by 59 percent, and that of pearl millet by 23 percent. India is the world's largest producer of millet, had a sharp decline in the area planted with the grain, which had an adverse effect on productivity and output. In the present paper an attempt was made to focus the importance of area, production and productivity of small millets, the problems and prospects in cultivation in the concern of Tamil Nadu as well as India as a whole.

REVIEW OF LITERATURE

Michaelraj and Shanmugam (2013), the paper stated that the millets grains are well known for their superior quality, nutritional security and human health. The paper strongly explained that there is need for developmental effort should be made through mini-kit demonstrations and State level Training Programme, a massive educational and promotional programme on millets and the Government must use its media campaign funds to take up millet production. Additionally, propounded that agronomic research should bring out efficient low-cost technology which was within the means of farmers and easy to adopt. ***Karthik et. al., (2023)***, the paper examined cultivation trends and factors affecting minor millets in India and Tamil Nadu from 1952-53 to 2021-22, revealing complex patterns, crop sensitivities, and the impact of rainfall and cultivation area. the paper identified conviction for low production and productivity of small millets in Tamil Nadu was low rainfall or drought-prone regions in India, specifically targeting these areas for minor millet cultivation. This will improve food security and farmers' resilience. The plan emphasizes the importance of tailored strategies and targeted support in promoting millet cultivation in water-scarce areas.

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MATERIALS AND METHODS

This study used secondary data from 1950-51 to 2021-22 to analyse the area, production, and productivity of minor millets in Tamil Nadu, using the Compound Annual Growth Rate and Compound Growth Rate. The sources of these time series data were extracted from the Ministry of Statistics and Programme Implementation. The exponential compound annual growth rate was estimated using linear functions on minor millets' area, production, and productivity, using the semi-log exponential functional form for trend analysis.

OBJECTIVE OF THE STUDY

- To examine the long-term trends in area, production, and productivity of small millets in India with special reference to Tamil Nadu.

RESULTS AND DISCUSSION

The results are analysed from the Time-series data taken from the Ministry of Statistical and Programme Implementation and used a statistical calculation of Compound Growth Rate and Compound Annual Growth Rate. CGR were analysed with time series data whereas CAGR were analysed with conversion time-series data into decade data.

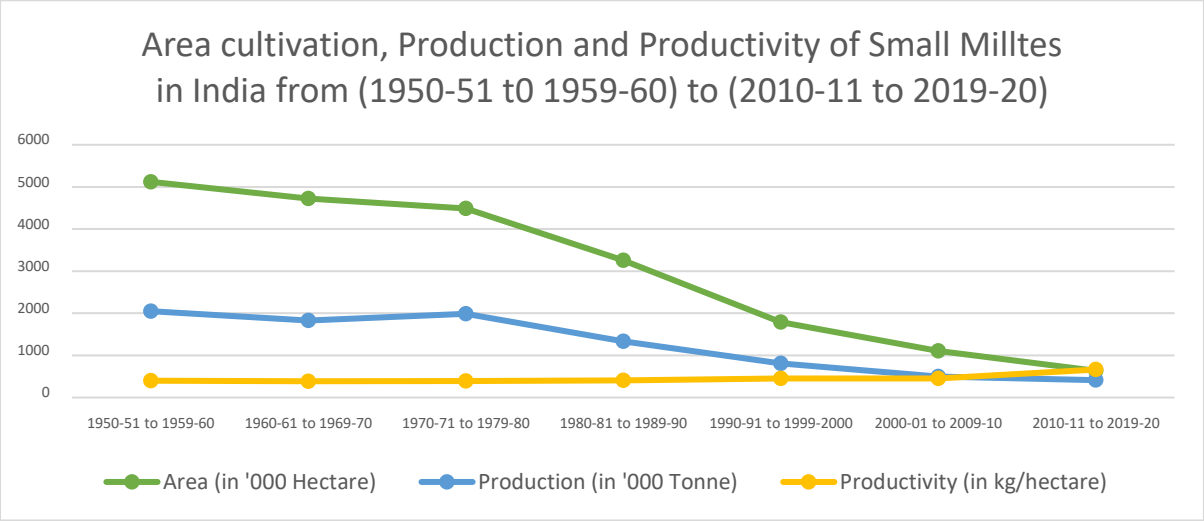
Table 01: The Compound Growth Rate and Compound Annual Growth Rate analysis of Small Millets in India and Tamil Nadu

Small Millets	Area (in '000 Hectare)		Production (in '000 Tonne)		Productivity (in kg/hectare)	
	CAGR	CGR	CAGR	CGR	CAGR	CGR
India	-0.257816	-3.64186	-0.204832	-2.88359	0.075541	0.788076
Tamil Nadu	-0.350627	-5.23585	-0.302599	-1.78414	0.075544	0.015368

Source: Ministry of Statistics and Programme Implementation, 2023.

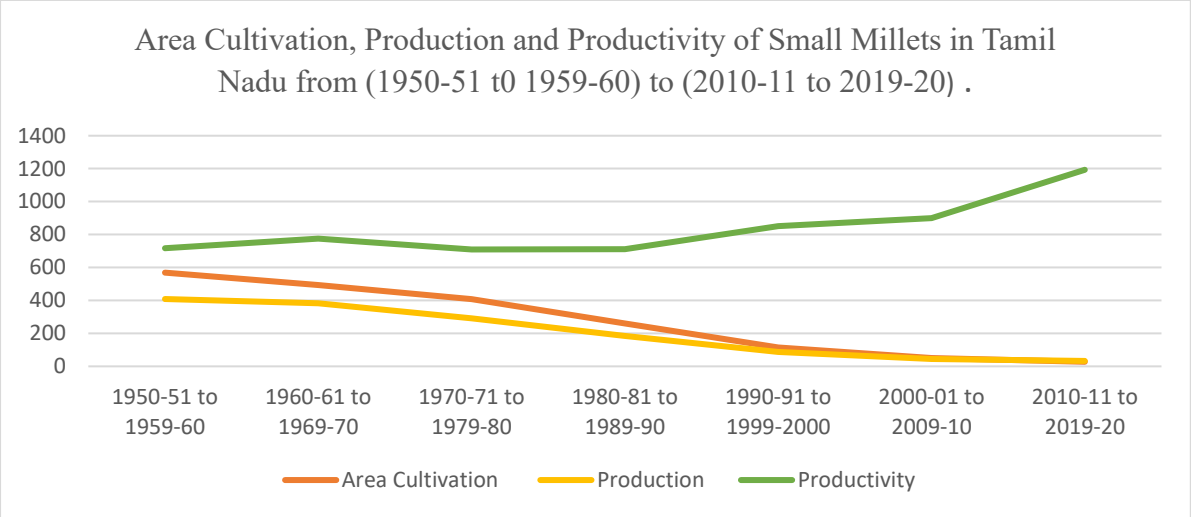
The analysis of data as presented in Table 01, spanning from (1950-51 to 1959-60) to (2010-11 to 2019-20) reveals nuanced trends in small millets cultivation in India as well as Tamil Nadu. Cultivation area showed fluctuation trajectories in 7 decades (CAGRs -0.257816 for India and CAGRs -0.350627 for Tamil Nadu). Production followed suit showing negative CAGRs (-0.204832 for India and -0.302599 for Tamil Nadu). Productivity persisting positive CAGRs (0.075541 for India and 0.075544 for Tamil Nadu).

On the other analysis that is Compound Growth Rate from (1950-51 to 1959-60) to (2010-11 to 2019-20). Cultivation area of small millets has negative side of CGRs (-3.641186 for India and -5.23585 for Tamil Nadu). Production followed suit showing adverse CGRs (-2.88359 for India and -1.78414 for Tamil Nadu). But, in the view on the productivity of small millets has a positive value of CGRs (0.788076 for India and 0.015368 for Tamil Nadu).



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From the above chart, the reduction in cultivation areas of small millets can be attributed to a host of factors such as evolving agricultural preferences, rapid urbanisation and industrialisation have potentially decreased the cultivation area of small millets in India. Similarly, the production of small millets is also decreased due to less area of small millet cultivation land. But the productivity of the small millets is increased after the 1970-71-to-1979-80-decade (after third decade) because of Green Revolution, line sowing, high yielding varieties seeds helps to increase the productivity of the small millets in India.



From the above chart representation, the cultivation area and the production of small millets in Tamil Nadu are also declining. Due to covertion of industrial sector from agricultural sector is the main causes for this declining of area cultivation and production of small millets in Tamil Nadu. But the productivity of small millets in Tamil Nadu is rapidly increasing due to Green Revloution and Tamil Nadu stands 8th place as a State in productivity of small millets.

CONCLUSION

The study examines cultivation trends and factors affecting minor millets in India and Tamil Nadu from 1950-51 to 2021-22, revealing complex patterns in cultivation areas, production, and productivity. Minor millets can address climate challenges, promote sustainable agriculture, and improve nutrition, making them resilient "smart foods" for a diverse, sustainable future. Furthermore, offer farmers in these drought-affected areas incentives and assistance programs to promote the adoption of small-scale millets farming, increasing their sustainability and resilience even more. This demonstrates how crucial it is to modify plans in response to unique local difficulties and emphasizes the function of focused assistance in encouraging small-scale millets production in regions vulnerable to water constraint.

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