

Economic Analysis of Pomegranate Production and Farmer Welfare in Chitradurga Taluks

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Abstract:

This survey describes how pomegranate cultivation has emerged as a highly remunerative enterprise in the arid and semi-arid regions of Karnataka, particularly in the Chitradurga district, due to its low water requirement and resilience to frequent droughts. The fruit's ability to thrive in challenging conditions makes it an appealing choice for farmers looking to maximize their profits while minimizing the risks typically associated with more water-dependent crops. This study evaluates the socio-economic status, investment patterns, financial viability, and production constraints encountered by pomegranate-growing farmers in Chitradurga. By understanding these key aspects, the research aims to shed light on the current practices and challenges within the industry. Primary survey data was collected from 90 randomly selected pomegranate growers across three leading taluks: Hiriya, Hosadurga, and Challakere. These areas were chosen due to their significant contributions to pomegranate production in the region. The survey aimed to gather insights directly from farmers about their experiences, successes, and hurdles in pomegranate cultivation. By analyzing the gathered data, the study seeks to provide a comprehensive overview of the dynamics affecting pomegranate farming, ultimately contributing to better support systems and policies for the local agricultural community. Such insights are vital for fostering sustainable growth in this promising sector.

Keywords: Pomegranate Cultivation, Economic Performance, Financial Feasibility, Benefit-Cost Ratio (BCR), Chitradurga District, Constraints.

1.1 Introduction

India, where 65% of the population relies on agriculture, generates significant revenue from this sector, particularly through fruit production. Historically, the Mughals expanded agricultural prominence with their extensive mango orchards, which added to India's agricultural richness. Agriculture continues to be a cornerstone of the economy, with horticulture emerging as an increasingly profitable industry. In terms of fruit consumption, India ranks tenth globally, showcasing the country's remarkable potential for crops like pomegranates. The state's commitment to horticulture is evident since Karnataka established the first horticultural promotion department in 1965. Currently, India cultivates over 1.32 lakh acres of pomegranates, with Maharashtra leading production at over one lakh metric tons, valued at approximately \$400. Pomegranates, thought to have originated in Iran around 2000 B.C., are cultivated in various countries and rank 18th worldwide in fruit production based on yield. Karnataka has become a prominent

state in horticulture, with horticultural crops covering 18 lakh hectares, 17.67 percent of which are fruits. In the 2013-14 period, the pomegranate cultivation in Karnataka spanned 6,911 hectares. The main districts for pomegranate cultivation include Chitradurga, Bijapur, and Bagalkot, among others. In Chitradurga alone, pomegranates occupy 10.79 percent of the total cultivated area, contributing significantly to the state's horticulture output. With 19.2% of national production, Karnataka stands as the second-largest producer of pomegranates, and the primary growing areas are expected to yield approximately 198,600 metric tons from an area of 18,400 acres.

1.2 Statement of the problem

Pomegranate farmers face significant challenges, especially since 2010-11, due to pests and diseases leading to a decline in cultivation. Limited studies exist on how pomegranate farming impacts farmers' economic conditions and asset formation. This study aims to **With this context, the researcher has made an effort to reckon the economic analysis of pomegranate cultivation in Karnataka's Chitradurga District.**

1.3 Significance of the study

Pomegranate is highly sought after for both domestic consumption and export in both national and international markets. As a result, there is a strong emphasis on increasing its production and productivity. India holds the top position globally in terms of pomegranate cultivation, with an area of 1.25 lakh hectares and a production of 8.21 lakh tonnes. Among the states in India, Maharashtra leads with an area of 0.99 lakh hectares and a production of 5.56 lakh tonnes, followed by Karnataka, Andhra Pradesh, and Gujarat. However, the productivity of pomegranate in India is relatively low at 6.57 tonnes per hectare compared to countries like Spain (18.5 tonnes per hectare) and the USA (18.3 tonnes per hectare) where pomegranate cultivation is significant. All six taluks in the Chitradurga district of Karnataka are situated in the Central Dry Zone (Zone IV). The district experiences an average normal rainfall of 534.8mm spread over 32 rainy days. The rainfall in the district is meager and unevenly distributed, and the soils are shallow and of poor quality. The majority of the rainfall occurs during the southwest monsoon season, which lasts from June to October. The net sown area in the district is 3.98 lakh hectares, out of which 22.1% (0.86 lakh hectares) is irrigated, and the remaining 77.9% is dependent on rainwater. The canal network provides limited irrigation facilities to farmers in the Hiriyur taluk. Agriculture in the district heavily relies on timely and sufficient rainfall.

This study also helpful to explore and address the constraints of pomegranate growers in Chitradurga district. This research led a significant contribution in the field of agricultural economics. This has been significantly beneficial to Government agencies, Agricultural boards, horticulture departments, farmers, stakeholders and interested academicians and research scholars to perceive the further focus on pomegranate cultivation.

1.4 Objectives of the study

The main object of the study was to assess the economic status of pomegranate-growing farmers in the Chitradurga district. This research aimed to analyze various aspects of their livelihoods, including income levels, production costs, and market accessibility. By examining these factors, the study sought to gain insights into the financial challenges and opportunities faced by these farmers. Understanding their economic conditions can help identify areas where support and improvement are needed, ultimately

enhancing the sustainability of pomegranate farming in the region. The findings may also contribute to broader agricultural policies and initiatives aimed at supporting local farmers and communities.

1.5 Hypothesis of the study

The hypothesis is generally regarded as the principal instrument in research. The main objective behind the formulation of the hypothesis is to empirically verify its validity. Inference will be drawn based on this empirical verification. Several hypotheses have been formulated for thorough empirical testing, each focusing on different aspects of farming and its effects.

- a) There is a significant increase in the income of farmers after engaging in pomegranate farming.
- b) There is a noticeable improvement in the asset position of farmers following their involvement in pomegranate farming practices.
- c) There is a significant difference in the rankings of the factors that impact farmers' income in the study area.
- d) The listed constraints do not significantly affect pomegranate farmers in the study area.
- e) There is a marked difference in the constraints faced by pomegranate farmers in the region being studied.

1.6 Scope of the study

The study identifies three scopes based on a thorough literature review: subject gap, geographical scope, and time-bound scope. There is minimal research on the economic analysis of pomegranate cultivation, with most studies focusing on cultivation techniques and medicinal properties. Geographically, while studies exist in Karnataka, few have addressed the economic aspects across all taluks in Chitradurga district. Additionally, previous research is outdated, failing to account for recent challenges in pomegranate cultivation caused by climate change. The study aims to fill these gaps by analyzing the economic viability of pomegranate farming in Chitradurga district. Limitations include a focus on select pomegranate growers, exclusion of other farmers' perspectives, a confined geographical area, reliance on primary data from only 495 growers, and findings that may not be applicable to other regions. The survey's accuracy is also influenced by potential biases of participants.

1.7 Research Methodology

Research Methodology serves as a toolkit for researchers, outlining methods, steps, and approaches to address research problems, akin to a roadmap for conducting studies. This research focuses on understanding the socio-economic conditions of pomegranate growers, examining the effects of pomegranate production on asset formation and farmers' income, and identifying constraints in cultivation. The researcher gathered both primary and secondary data, employing descriptive and inferential statistics for analysis. Detailed discussions on research methodology, design, and procedures follow.

Research design encompasses the strategies for conducting the research, allowing for the application of suitable methodologies. This study utilized descriptive and analytical designs. The sample size was determined using the Cochran formula, which estimates the optimal size based on confidence interval and precision. In this context, the sample size formula is defined as:

$$n = Z^2pq / e^2$$

With a confidence level of 95%, a sampling margin of error of 4%-5%, and calculated values ($Z = 1.96$, $p = 0.5$, $q = 0.5$), the resulting sample sizes are 384 for a 5% margin of error and 600 for a 4% margin, yielding an ideal range of 384 to 600.

The population for this study consists of pomegranate growers from Chitradurga district, utilizing multistage random sampling. Six taluks were selected, and from each, six villages with pomegranate farmers were identified in collaboration with local horticulture officers. A total of 36 villages were randomly chosen, and 14 farmers per village were initially planned for selection, totalling 504 farmers. However, due to shortages, only 495 farmers were ultimately sampled.

1.8 Statistical Techniques Used

Data computation and analysis utilized basic statistical methods relevant to the study's goals, combining quantitative and qualitative elements. Tools like SPSS 26 and Excel facilitated the use of descriptive statistics, parametric and non-parametric tests, including t-tests, ANOVA, and Chi-Square for hypothesis validation.

1.9 Economic Status of Pomegranate-Growing Farmers in Chitradurga District

The economic well-being of pomegranate farmers plays a pivotal role in the overall agricultural landscape, reflecting the health and sustainability of this vital sector. The study delves into the economic status of pomegranate growers in the designated area, shedding light on various facets of their financial standing. Table 1 elucidates the income levels of these farmers, illustrating a diverse spectrum ranging from modest to substantial earnings. The data reveals that a significant proportion of farmers fall within the income brackets of 3,00,000 to 5,00,000, emphasizing the economic significance of pomegranate cultivation in contributing to the livelihoods of the local populace.

Table 1 shows the economic indicators outlined in 4 is crucial for policymakers, researchers, and stakeholders involved in agricultural development. This comprehensive study serves as a valuable resource for devising targeted interventions and policies aimed at enhancing the economic sustainability and living standards of pomegranate farmers, ultimately contributing to the overall growth of the agricultural sector in the region.

Table 1: shows the income level of pomegranate farmers

Economic indicators	classification	N	%
Annual Income of the family	50,000 to 1,00,000	11	2.2
	1,00,00 to 2,00,000	22	4.4
	2,00,000 to 3,00,000	59	11.9
	3,00,000 to 4,00,000	103	20.8
	4,00,000 to 5,00,000	153	30.9
	5,00,000 and above	147	29.7
	Total	495	100
Debt	No	170	34.3
	Yes	325	65.7
	Total	495	100

Table 1 provides a comprehensive view of the income distribution among pomegranate farmers. The data

indicates a diverse economic landscape, with a substantial number of farmers falling within the income brackets of 3,00,000 to 5,00,000. The highest percentage of farmers, 30.9%, reports an annual income between 4,00,000 and 5,00,000. This suggests that pomegranate cultivation significantly contributes to the financial well-being of a considerable portion of the farming community. However, the fact that 65.7% of farmers carry some level of debt highlights a potential area for financial support and management interventions.

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Table 2 outlines the ownership patterns of crucial capital assets among pomegranate farmers. A noteworthy finding is that 52.9% of farmers own tractors, which can positively impact agricultural productivity. Additionally, the 100% ownership of bore wells reflect access to a vital water resource for irrigation. The high percentage (86.1%) of farmers owning sprayers suggests a widespread adoption of modern farming techniques, contributing to efficient crop management practices.

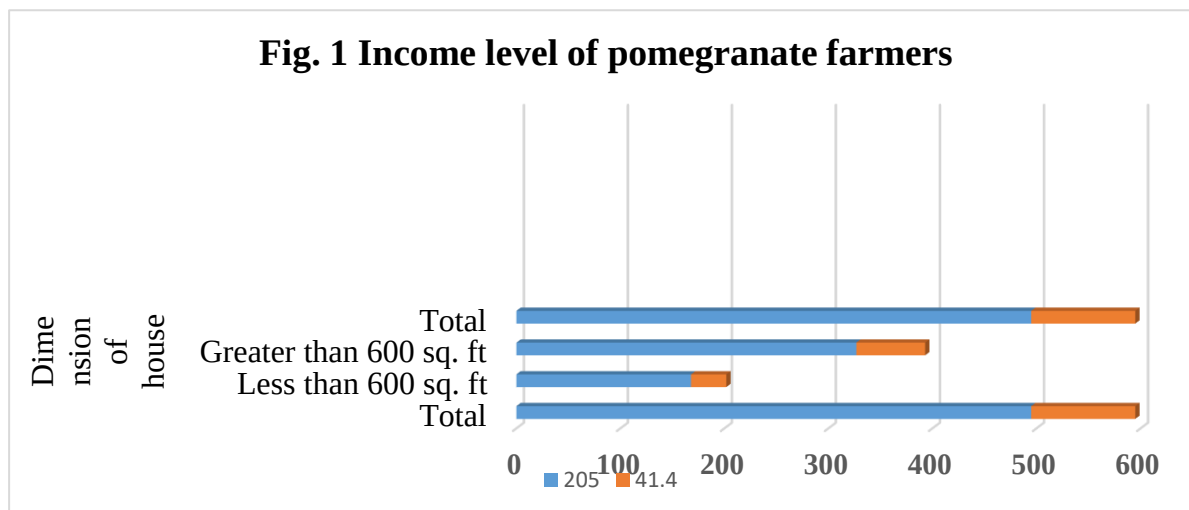


Table 2: Capital Assets of pomegranate farmers

Economic indicators	classification	N	%
Tractor	Not owned	233	47.1
	Owned	262	52.9
	Total	495	100
Bore well	Not owned	0	0
	Owned	495	100
	Total	495	100
Sprayers	Not owned	0	0

	Owned	495	100
	Total	495	100
Fencing	Not owned	69	13.9
	Owned	426	86.1
	Total	495	100

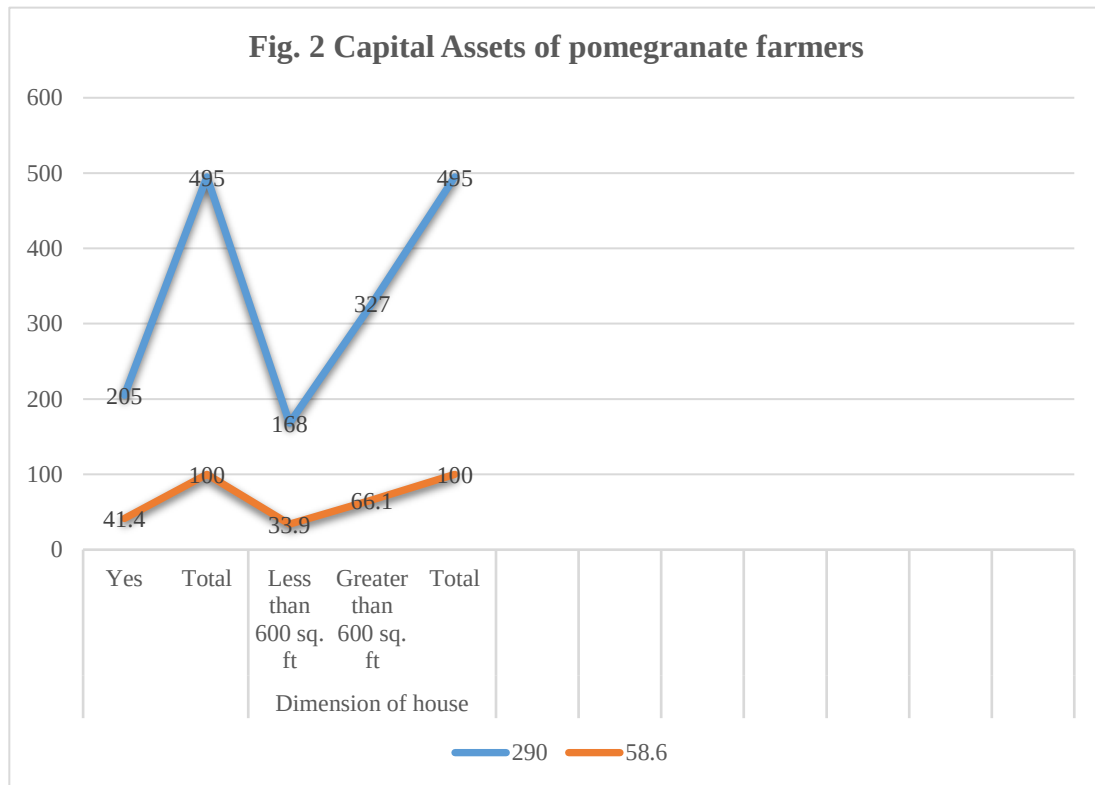


Table 2 sheds light on the consumer durables owned by pomegranate farmers, offering insights into their standard of living. An overwhelming majority, 96.2%, own bikes, indicating a high level of mobility. However, the fact that 71.1% of farmers do not own cars suggests potential gaps in transportation infrastructure. Ownership of gold (71.7%) reflects a certain level of financial stability, while the universal ownership of televisions showcases the prevalence of this modern amenity.

Table 3: Consumer durables of pomegranate farmers

Economic indicators	classification	N	%
Bikes	Not owned	19	3.8
	Owned	476	96.2
	Total	495	100
Cars	Not owned	352	71.1
	Owned	143	28.9
	Total	495	100
Air cooler	Not owned	312	63
	Owned	183	37

	Total	495	100
Television	Not owned	0	0
	Owned	495	100
	Total	495	100
50 gram gold	Not owned	140	28.3
	Owned	355	71.7
	Total	495	100

Fig. 3 Consumer durables of pomegranate farmers

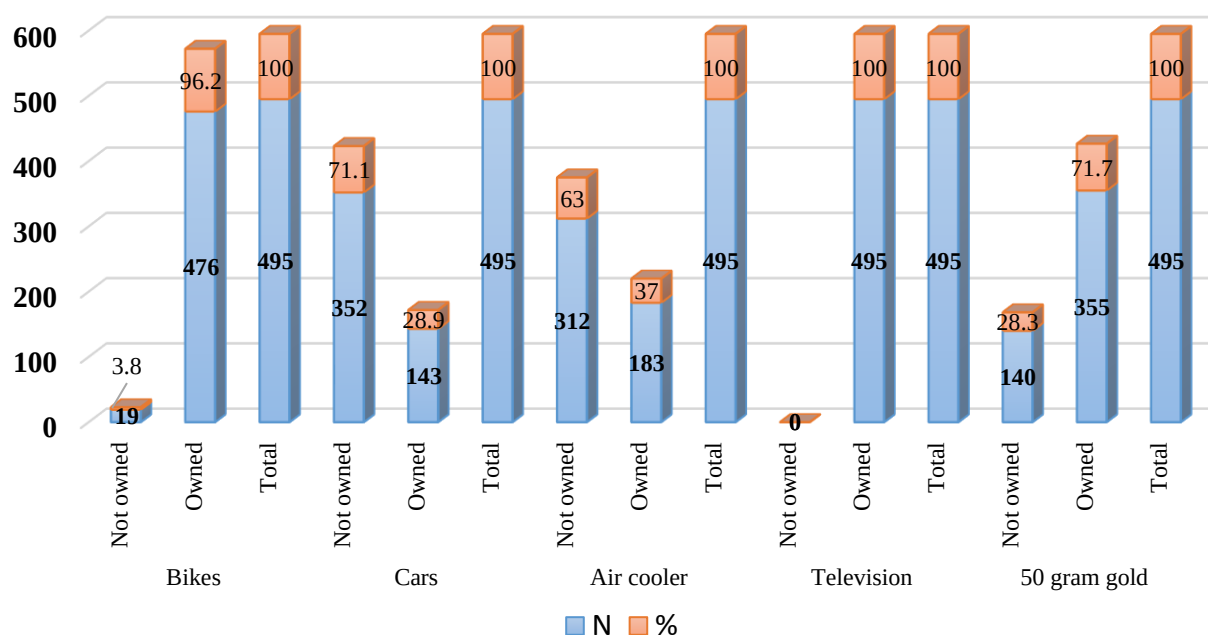


Table 3 provides insights into the housing conditions of pomegranate farmers. A significant portion (58.6%) of farmers does not have RCC roofed homes, indicating a need for improved housing infrastructure. Additionally, the data shows variations in housing sizes, with 66.1% of farmers living in houses larger than 600 sq. ft. These findings can guide targeted initiatives for housing development and improvements tailored to the specific needs of the farming community.

Table 4 Shows the housing conditions of pomegranate farmers

Economic indicators	classification	N	%
RCC roofed home	No	290	58.6
	Yes	205	41.4
	Total	495	100
Dimension of house	Less than 600 sq. ft	168	33.9
	Greater than 600 sq. ft	327	66.1
	Total	495	100

Source: Based on Field Survey

1.10 Conclusion:

The exploration of demographic characteristics within the realm of pomegranate farming in Chitradurga district reveals a tapestry of diversity that significantly influences the agricultural landscape. The predominance of male farmers underscores the traditional gender roles in agriculture, emphasizing the need for gender-sensitive interventions. Marital status distribution indicates the importance of family units in agricultural endeavors, calling for strategies that consider the familial context. The age distribution highlights a mix of experience levels, suggesting opportunities for knowledge exchange and skill development programs.

Caste diversity among farmers unveils the varied socio-economic backgrounds, emphasizing the necessity of targeted policies that address the unique challenges faced by different caste groups. Family structures and sizes present valuable insights into the dynamics of labor availability and resource utilization, guiding the design of support mechanisms. Religious affiliation adds a cultural dimension, urging the integration of local practices into agricultural initiatives.

The economic status of pomegranate farmers is a multifaceted terrain, with strengths in income diversity, capital asset ownership, and consumer durables. However, challenges such as debt prevalence and housing infrastructure gaps require targeted interventions. The outcomes analysis serves as a roadmap for policymakers and stakeholders, guiding them to formulate strategies that capitalize on strengths, address challenges, and ultimately enhance the overall well-being and sustainability of pomegranate farming in the region. This study contributes valuable insights for shaping a more resilient and prosperous agricultural landscape.

REFERENCES:

1. Akcaoz, H. (2009, April). Analysis of energy use for pomegranate production in Turkey. *Journal of Food, Agriculture & Environment*, 7(2), 475-480. Retrieved from <https://www.world-food.net/>
2. Azimi, S. (2022). Problems In Supply Chain Of Pomegranate (*Punica Granatum*) In Arghandab District, Ksandahar Province, Afghanistan. *The J. Res. PJTSAU*, 50(2), 133-135. Retrieved from surgul.azimi@gmail.com
3. Babaei, M. (2013, February). Pomegranate marketing margins in the Neyriz, Iran. *Journal of Development and Agricultural Economics*, 67-70. doi:10.5897/JDAE12.108.
4. Chavai, A. M. (2016). Impact of National Horticulture Mission on the Pomegranate Growers of Maharashtra. *National Academy of Agricultural Science (NAAS)*, 34(4), 1083-1086.
5. Dinc, M. S. (2017). Organizational Commitment Components and Job Performance: Mediating Role of Job Satisfaction. *Pak J Commer Soc Sci* , 11 (3), 773-789.
6. Garg, A. K. (2007). PROJECT REPORT ON EXPORT PROMOTION. A *project of ministry commerce* , 1 (1), 1-88.
7. R.T, S. (2017, Feb). Economic and Financial Feasibility of Pomranate and Financial Feasibility of Pomegranate Cultivation in Chitradurga District of Karnataka. *International Journal of Agricultural Science and Research*, 7(1),

127-134. Retrieved from www.tjprc.org

8. Sonyal, S. (2016). Survey for Pomegranate Wilt Complex Caused by *Ceratocystis Fimbriata* and *Meloigogyne incognita* in Northern Karnataka. *Journal of Pure Ournal of and applied Microbiology*, 10 (1), 1-5.
9. Vishal. (2018). Production and marketing of Pomeranate in Bagalkot District A Case Study. *International Journal of Creative Research Thoughts*, 6(2), 203-218. Retrieved from www.ijcrt.org