Ensuring Stable Tomato Prices in India: Challenges and Solutions

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How to cite this article:

Naga Durga, M. J. S. L., Dara, M. K., & Choudhary, V. K. (2026). Ensuring stable tomato prices in India. Agrolife Frontiers, 1(6), 66-72.

Abstract

Tomato is one of the most widely cultivated vegetable crops in India and plays a crucial role in food security, nutrition, and farmer livelihoods. Despite increasing production, tomato farmers frequently face severe price crashes during harvest seasons, while consumers often experience sharp price increases during periods of shortage. This apparent contradiction, commonly known as the tomato price paradox, reflects the complex interaction between production, perishability, storage limitations, market arrivals, and supply chain inefficiencies. Seasonal gluts, weather extremes, inadequate processing facilities, and poor market intelligence contribute significantly to price volatility. This article explores the major factors responsible for tomato price fluctuations in India, their impact on farmers and consumers, and practical strategies to improve market stability. Strengthening storage infrastructure, promoting farmer producer organizations, expanding processing industries, and improving market forecasting systems can help create a more resilient tomato value chain that benefits both producers and consumers.

Keywords: Tomato, Price Volatility, Agricultural Marketing, Farmers, Supply Chain, Market Intelligence

Introduction: The Vegetable That Keeps Making Headlines

Few agricultural commodities receive as much public attention in India as tomatoes. Almost every year, newspapers and television channels report either farmers throwing tomatoes on roads due to extremely low prices or consumers struggling to purchase tomatoes because of unprecedented price increases. In some years, farmers receive less than ₹5 per kilogram during peak harvest periods, while retail prices in urban markets may exceed ₹100 per kilogram during supply shortages. This recurring phenomenon raises an important question: why do tomato prices fluctuate so dramatically? More importantly, why do farmers

suffer from low prices when production is high, while consumers pay exceptionally high prices when production declines?

Tomato is not merely a vegetable crop; it is an important source of income for thousands of farming households across India. It is cultivated in almost all states and forms an essential component of Indian diets. However, the economic realities surrounding tomato cultivation often expose farmers to substantial risks. The frequent mismatch between production and prices highlights structural weaknesses in agricultural marketing systems. Understanding the reasons behind these fluctuations is essential for developing sustainable solutions that can protect both producers and consumers.

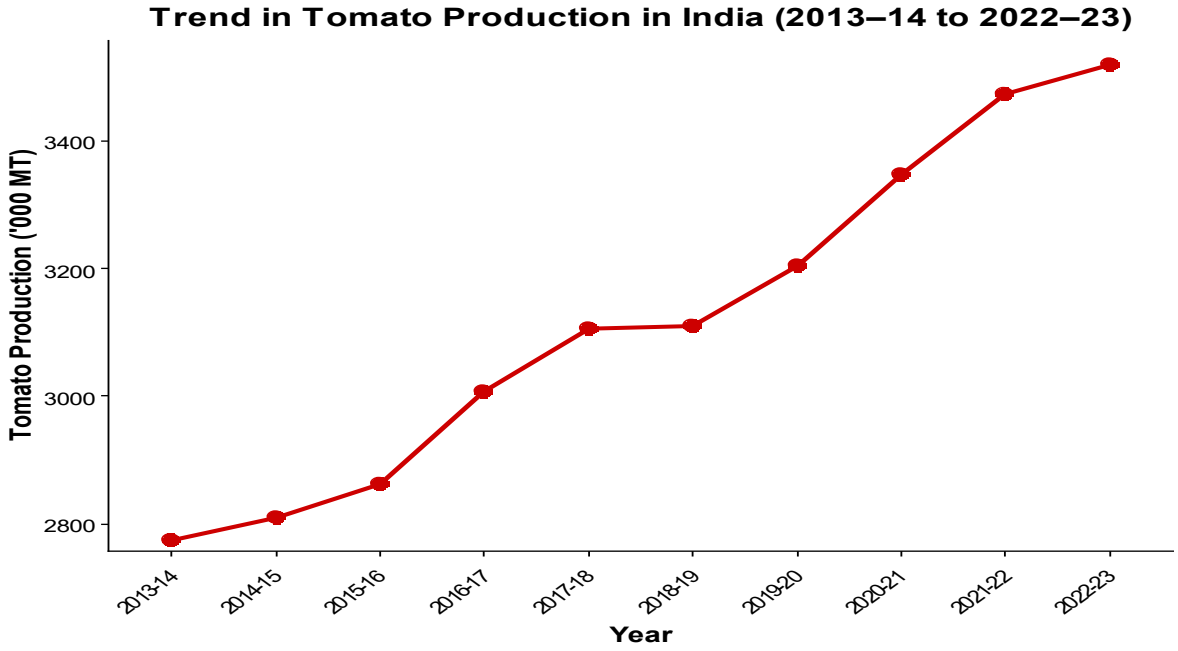

Fig. 1 Representation of Trend in Production of Tomato over the years (Source: National Horticulture Board, 2023)

India's Tomato Economy

India is among the world's leading producers of tomatoes. Major tomato-producing states include Andhra Pradesh, Madhya Pradesh, Karnataka, Gujarat, Odisha, Maharashtra, and Telangana. Figure 1 above illustrates the increasing trend of tomato in India over the years. The crop occupies a significant share of the vegetable sector and contributes substantially to rural employment generation. Tomatoes are cultivated throughout the year under different agro-climatic conditions. Their widespread use in households, hotels, food processing industries, and institutional kitchens ensures continuous demand. The crop also provides relatively quick returns compared to many field crops, making it attractive for small and marginal farmers. However, tomato cultivation is characterized by high production risks and

considerable market uncertainty. Unlike cereals, tomatoes are highly perishable and cannot be stored for long periods without proper infrastructure. Consequently, farmers often become vulnerable to market fluctuations immediately after harvest.

Why Do Tomato Prices Crash?

Seasonal Gluts and Excess Market Arrivals

One of the primary reasons for tomato price crashes is the occurrence of seasonal gluts. Favorable weather conditions, attractive prices during previous seasons, and increased cultivation area often encourage farmers to expand tomato production. When many farmers harvest simultaneously, markets receive large quantities of tomatoes within a short period. As supply increases rapidly, market prices decline. Since tomatoes cannot be stored for extended periods under normal conditions, farmers are compelled to sell immediately. This excess supply frequently results in distress sales and substantial financial losses.

Andhra Pradesh is one of India's leading tomato-producing states and frequently experiences sharp price fluctuations. Markets such as Madanapalle in Chittoor district often witness large arrivals during peak harvesting periods. When supply exceeds demand, wholesale prices may decline substantially, reducing farmers' profitability despite good production levels.

Perishability: The Biggest Challenge

Tomato is among the most perishable agricultural commodities. After harvest, quality deterioration begins rapidly, particularly under high temperatures. Farmers must sell their produce quickly to avoid spoilage. Unlike grains, which can be stored for months, tomatoes often have only a limited marketing window. This reduces farmers' bargaining power and strengthens the position of intermediaries and traders during periods of oversupply.

Inadequate Storage Infrastructure

Cold storage and refrigerated transportation facilities remain insufficient in many tomato-producing regions. The absence of efficient cold chains forces farmers to dispose of produce immediately after harvest. Investment in modern storage infrastructure could help distribute market arrivals over time and reduce the severity of price crashes.

Limited Processing Capacity

Tomatoes can be converted into value-added products such as puree, ketchup, paste, sauces, and dehydrated products. However, only a relatively small proportion of India's tomato production is processed. A stronger processing sector could absorb surplus production during bumper harvests and provide an alternative market outlet for farmers. Unfortunately, inadequate processing infrastructure limits this opportunity.

Why Do Tomato Prices Suddenly Rise?

While farmers often suffer from low prices during periods of surplus production, consumers experience the opposite problem when supplies become scarce.

Weather Extremes

Tomato cultivation is highly sensitive to weather conditions. Excessive rainfall, floods, droughts, heat waves, and unseasonal weather can damage crops and reduce market arrivals. Recent years have demonstrated how climate-related disruptions can rapidly influence tomato prices. Heavy rainfall and heat stress have repeatedly affected production in major tomato-growing regions, contributing to supply shortages and price spikes.

Pest and Disease Incidence

Tomato crops are vulnerable to various pests and diseases, including fruit borers, leaf curl virus, and fungal infections. Severe outbreaks can reduce both yield and quality, limiting the quantity of marketable produce.

Transportation and Supply Chain Disruptions

Efficient transportation plays a crucial role in maintaining stable vegetable supplies. Disruptions in logistics, rising fuel costs, road blockages, or adverse weather conditions can affect the movement of tomatoes from production centres to consumption markets. Even temporary disruptions may create local shortages and trigger sharp increases in retail prices.

Karnataka's Kolar market, one of the largest tomato trading centres in South India, plays a significant role in determining regional price trends. Weather-related production losses or supply disruptions in major producing belts often influence tomato prices across several neighbouring states, demonstrating the interconnected nature of vegetable markets.

Climate Variability and Tomato Markets

Climate variability is increasingly influencing agricultural production systems worldwide, and tomato cultivation is no exception. Changes in rainfall patterns, rising temperatures, and increased frequency of extreme weather events have introduced additional uncertainty into tomato production. Excess rainfall can increase disease incidence and reduce fruit quality, while prolonged dry spells may affect plant growth and productivity. Heat waves can accelerate fruit deterioration and reduce marketable yields. As climate change intensifies, production risks are expected to increase further. Consequently, climate-resilient cultivation practices and improved risk management strategies are becoming increasingly important for sustaining tomato production and stabilizing market prices.

Impact on Farmers and Consumers

Price volatility affects both producers and consumers, although in different ways. For farmers, low prices reduce profitability and increase financial stress. In extreme situations, farmers may leave produce unharvested because harvesting and transportation costs exceed expected returns. For consumers, sudden price increases raise household food expenditure. Tomatoes are a key ingredient in many Indian dishes, making them highly visible in discussions related to food inflation. Significant increases in tomato prices often affect the overall cost of preparing household meals. The coexistence of low farm-gate prices and high retail prices reflects inefficiencies within agricultural marketing systems and highlights the need for better coordination across the supply chain.

Building a More Stable Tomato Market

Reducing tomato price volatility requires coordinated efforts involving farmers, researchers, policymakers, market intermediaries, and private-sector stakeholders. The table illustrated below forms a clear idea of major problems and solutions.

Table 1 Major causes of tomato price volatility and possible solutions. Source: Adapted from National Horticulture Board (2024), Rhamya (2024), Kumar et al. (2025), and Pasupuleti et al. (2025).

Major Cause	Impact on Prices	Impact on Farmers and Consumers	Possible Solutions
Seasonal glut during harvest	Sharp decline in market prices	Farmers receive low returns and may resort to distress sales	Staggered planting, crop planning, and market intelligence services.
High perishability of tomatoes	Forced immediate sale after harvest	Farmers have limited bargaining power and suffer post-harvest losses	Improved storage facilities and cold chain infrastructure.
Inadequate cold storage facilities	Concentrated market arrivals	Excess supply during short periods causes price crashes	Expansion of cold storage and refrigerated transportation.

Limited processing capacity	Surplus produce remains unutilized	Wastage increases and farmer income declines	Promotion of tomato processing industries (ketchup, puree, paste, sauces)
Excessive rainfall and floods	Reduced production and supply shortages	Consumers face higher prices; farmers may suffer crop damage	Climate-resilient farming practices and improved drainage systems.
Drought and heat waves	Lower yields and poor fruit quality	Reduced market arrivals lead to price spikes	Efficient irrigation systems and heat-tolerant varieties.
Pest and disease outbreaks	Decline in marketable production	Production losses and higher market prices	Integrated pest and disease management practices
Supply chain and transportation disruptions	Delayed movement of produce	Local shortages and retail price increases	Better logistics, road connectivity, and supply chain management.
Lack of market information	Poor production and marketing decisions	Farmers may overproduce during favourable years	Digital market intelligence and price forecasting systems.
Weak farmer bargaining power	Lower farm-gate prices	Farmers receive a small share of consumer prices	Strengthening Farmer Producer Organizations (FPOs) and collective marketing.

Conclusion

Tomato price volatility remains one of the most visible examples of the challenges facing agricultural marketing in India. The tomato price paradox demonstrates that increased production alone does not guarantee higher farm income. Seasonal gluts, perishability, inadequate storage, weak processing infrastructure, climate variability, and supply chain inefficiencies all contribute to unstable prices. Addressing these challenges requires a

combination of improved infrastructure, stronger farmer organizations, enhanced market intelligence, and climate-resilient production systems. By adopting a more integrated approach to production and marketing, India can create a more efficient tomato value chain that benefits both farmers and consumers while ensuring stable supplies and affordable prices.

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