AGRI MAGAZINE
(International E-Magazine for Agricultural Articles)
Volume: 03, Issue: 01 (January, 2026)
Available online at http://www.agrimagazine.in
©Agri Magazine, ISSN: 3048-8656

Price volatility in Agricultural Commodities: Causes and Mitigation Strategies

Ankita Sahu, Devashish Meena, *Neha Dwivedi and Aditya Singh
Department of Agricultural Economics, RVSKVV-College of Agriculture, Indore, Madhya Pradesh, India
***Corresponding Author's email: nehaphdsc@gmail.com**

Price volatility in agricultural markets refers to rapid and unpredictable fluctuations in commodity prices, driven by variations in supply, demand, and external factors. This phenomenon has significant economic, social, and political impacts in both global and Indian contexts. The unique characteristics of agricultural commodities—seasonality, perishability, limited storage, bulkiness (large volume complicating transport and storage), pest infestations, and natural disasters—exacerbate volatility. Price volatility in agricultural commodities, such as wheat, gram, mustard, cotton, and onion, involves rapid, unpredictable price fluctuations, significantly impacting global and Indian markets from 2020–2024. Cotton exhibits the highest volatility due to global demand shifts and pest vulnerabilities. Causes include supply-demand imbalances, weather events, market speculation, global economic factors, government policies, and geopolitical disruptions like the Ukraine-Russia war. Farmers face income instability, consumers endure food inflation, and economies suffer reduced competitiveness. Mitigation includes futures contracts, crop insurance, diversification, infrastructure development, transparent market information, and climate-resilient practices. A balanced approach ensures price stability and food security.

Global Scenario

Cotton exhibits the highest volatility, initially driven by the COVID-19 pandemic, which caused a price surge due to reduced exports. Subsequent spikes resulted from U.S.–China trade policies affecting cotton markets, followed by trade disruptions from the Ukraine-Russia war. For mustard, prices rose during COVID-19 due to reduced palm oil exports but later declined. After 2023, the Ukraine-Russia war curtailed sunflower oil exports, primarily supplied by these countries, further impacting mustard prices. Other crops, including wheat and gram, experienced moderate price fluctuations due to COVID-19 and the Ukraine-Russia war. Rising global population and consumption have steadily increased agricultural commodity prices.

Indian Scenario

In India, commodity prices fluctuated due to the COVID-19 pandemic and the Ukraine-Russia war. Cotton prices surged in 2022 due to heightened post-COVID-19 demand and strained U.S.–China trade relations. Mustard prices initially rose due to reduced palm oil imports during COVID-19, but increased imports after 2022 stabilized and lowered prices. Wheat and gram prices increased initially due to COVID-19 disruptions, followed by heightened global demand due to reduced supply from Ukraine and Russia. India's lifting of its wheat export ban further drove price increases.

Effects on the Market

1. On Farmers: - Income instability, Distress sales, Production planning difficulty, Debt burden, Psychological stress.

2. On Consumers: - Food inflation, Reduced access to nutritious food, Higher household expenditure, Inequality in diet.
3. On Traders and Processors: - Uncertainty in procurement, Higher transaction costs, Loss of competitiveness, Investment hesitation.
4. On Economy: - Inflationary pressures, Reduced export competitiveness, Policy instability, Strain on public finances.
5. On Investment: - Discourages private investment, Slows modernization, Reduces foreign investment, Hampers rural development.

Causes of Price Volatility

1. Supply and Demand Dynamics: Overproduction lowers prices, while shortages increase them.
2. Weather and Climate Events: Droughts, floods, and unseasonal rains reduce yields (Elleby et al., 2020).
3. Market Speculation: Traders' speculative activities create artificial demand or panic selling (Gilbert and Morgan, 2010).
4. Global Economic Factors: Inflation, currency fluctuations, and trade policies affect global prices.
5. Technological Advances: High-yield seeds or irrigation can cause temporary oversupply, lowering prices
6. Government Policies: - Price support policies (MSP in India, subsidies in the U.S. or EU), Import/export restrictions, tariffs, Buffer stock releases by governments, Sudden bans (like on wheat, onion, or rice exports).
7. Transportation and Infrastructure: -Poor roads, storage facilities, and Fuel price hikes increase transportation costs, directly affecting commodity prices.
8. Information Flow: - Incomplete or delayed market information, Rumours, fake news, or lack of transparency in production and stock data can exaggerate volatility.
9. Other Factors

a) **Geopolitics:** Trade wars (e.g., U.S.–China soybean disputes) disrupt supply chains.
b) **COVID-19 Pandemic:** Lockdowns reduced supply chains and demand for perishables like vegetables while increasing demand for grains (Elleby et al., 2020).
c) **Ukraine-Russia War:** Disrupted wheat, maize, and fertilizer exports, raising global prices (FAO, 2024).

Mitigation Strategies

1. Risk Management Tools: -Future Contract with farmers, traders, and processors and Crop Insurance Covers farmers against losses from weather shocks, pests, and diseases.
2. Improved Agricultural Practices: - Diversification or mixed farming with sustainable farming practices maintain soil fertility and stable yields, reducing vulnerability to volatility.
3. Market Information and Transparency: -Timely data & information from mobile apps, digital markets and government portals can give farmers real-time updates on prices, demand, and weather forecasts.
4. Infrastructure Development: - Building rural roads, cold storage, warehouses, and processing units reduces post-harvest losses and stabilizes supply. Reliable irrigation reduces dependence on monsoon rainfall and helps maintain consistent production levels.
5. Trade Policies: - Reducing trade barriers by open trade policies allow smoother flow of agricultural commodities across borders and strategic food reserves stabilize prices and ensure food security.
6. Government Intervention: - Price Stabilization Programs like MSP (Minimum Support Price), subsidized fertilizers, seeds, electricity, and credit reduce farmers' costs, helping them withstand price volatility.
7. Research and Innovation: - Developing drought-resistant, pest-resistant, and high-yielding varieties, use of precision farming, drones, remote sensing, and AI improve efficiency and reduces production risks.

8. Global Coordination: - International coordination among major food-producing nations helps prevent export bans, hoarding, and panic buying during crises.FAO, WTO, and other global bodies can monitor and manage global food supply chains.

9. Adaptation of Climate-Resilient Agriculture: - Adoption of agroforestry, water-efficient crops, drought-tolerant varieties, and early warning systems helps farmers cope with unpredictable weather. Promotes long-term sustainability and reduces climate-induced volatility.

10. Consumer Education: - Educating consumers to avoid overbuying, wasting, and discarding food with Balanced Diet Awareness helps stabilize demand for limited commodities.

Conclusion

Price volatility in agricultural commodities poses economic, social, and political challenges, affecting farmers, consumers, traders, and economies. While natural and market forces cause fluctuations, excessive volatility disrupts planning, market efficiency, and food security. Stabilization requires strengthening infrastructure, promoting diversification, encouraging futures markets, and ensuring timely government interventions. A balanced approach that stabilizes prices without distorting market signals is essential for resilience and sustainability in the agricultural sector.

References

1. Birthal, P. S., Negi, A., & Joshi, P. K. (2019). Understanding causes of volatility in onion prices in India. Journal of Agribusiness in Developing and Emerging Economies, 9(3), 255–275. Retrieved from https://doi.org/10.1108/JADEE-04-2018-0051
2. Directorate of Economics and Statistics. (2024). Agricultural prices in India report. Ministry of Agriculture and Farmers Welfare, Government of India. Retrieved from https://desagri.gov.in
3. Elleby, C., Pérez Domínguez, I., Adenauer, M., & Genovese, G. (2020). Impacts of the COVID-19 pandemic on the global agricultural markets. Environmental and Resource Economics, 76(4), 1067–1079. Retrieved from https://doi.org/10.1007/s10640-020-00473-6
4. Food and Agriculture Organization of the United Nations. (2024). FPMA tools and FAOSTAT report. Retrieved from https://www.fao.org/home/en
5. Gilbert, C. L., & Morgan, C. W. (2010). Food price volatility. Philosophical Transactions of the Royal Society B: Biological Sciences, 365(1554), 3023–3034. Retrieved from https://doi.org/10.1098/rstb.2010.0139
6. Huchet-Bourdon, M. (2011). Agricultural commodity price volatility: An overview. OECD Food, Agriculture and Fisheries Papers, (52). Retrieved from https://doi.org/10.1787/5kg0t00nrthc-en
7. Minot, N. (2014). Food price volatility in sub-Saharan Africa: Has it really increased? Food Policy, 45, 45–56. Retrieved from https://doi.org/10.1016/j.foodpol.2013.12.008
8. Press Information Bureau. (2024, September 1). Agricultural market updates. Government of India. Retrieved from https://www.pib.gov.in
9. Shekhar, C. S. C., Roy, D., & Bhatt, Y. (2018). Food inflation and volatility in India: Trends and determinants. Indian Economic Review, 53(1–2), 65–91. Retrieved from https://doi.org/10.1007/s41775-018-0017-z
10. Times of India. (2024, October 10). Agricultural commodity price trends. Retrieved from https://timesofindia.indiatimes.com