Innovations

Beyond Aggregation: Role of State-Level FPC - MAHA FPC in Managing Volatility in Onion and Pulses Markets

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Abstract: *This study presents a comprehensive analysis of pulse production trends, onion procurement, and quality recovery under the Price Stabilization Fund (PSF) scheme from 2019 to 2023, with a focus on data associated with MAHA FPC and related regional operations. The findings indicate significant fluctuations in pulse production, with total output reaching 6,74,434.38 metric tonnes (MT) over the four-year period. Gram emerged as the dominant pulse, contributing over 95% of total production, while other pulses such as Moong, Urad, and Tur showed minimal and inconsistent yields, pointing to limited cultivation or reporting gaps. Notably, a peak in production was recorded in 2021–22, driven primarily by a bumper harvest of Gram, likely facilitated by favorable conditions and supportive policies. In terms of onion procurement under the PSF (Price Stabilization Fund) and private trade, a total of 1,21,404.73 MT was procured across five seasons (R-18 to R-23), with PSF accounting for 97.9% of the total volume. A peak was observed in R-20, followed by a gradual decline, reflecting possible shifts in government intervention or market dynamics. The analysis of A- and B-grade onion recovery under PSF-R24 across 11 Farmer Producer Companies (FPCs) showed an average A-grade recovery of 63.11% and B-grade recovery of 22.28%. While certain FPCs like Ajinkya Agro FPC demonstrated high A-grade recovery, larger procuring FPCs maintained consistent but average quality levels. The results highlight opportunities for enhancing post-harvest practices and quality management through capacity building. Overall, this multi-year assessment underscores the need for diversification in pulse cultivation, strategic procurement planning, and improved post-harvest handling to strengthen agricultural resilience and market efficiency under PSF schemes.*

Keywords: *production, price, stabilization, procurement, harvest recovery, agricultural trends*

1. Introduction:

India holds a pivotal position in the global pulses sector, being the largest producer, consumer, and importer of pulses worldwide. It contributes approximately 25% of global pulse production, accounts for about 27% of global consumption, and meets around 14% of global imports. Pulses form a critical component of India's agricultural landscape, occupying nearly 23% of the total area under food grain cultivation and contributing roughly 9–10% of total food grain production. With an estimated 30 million hectares under pulse cultivation, the country produces an average of 25 million tonnes annually, with an average productivity of 851 kg/ha, based on data from 2018–19 to 2022–23 (Department of Agriculture & Farmers' Welfare, 2024). Onion is a key vegetable consumed globally in fresh form. India leads the world in terms of cultivation area, representing nearly 21% of global acreage with about 480 thousand hectares under onion farming. In production volume, the country ranks second after China, contributing more than 15 million tonnes annually (Kumar et al., 2011). Small and marginal farmers in India have been vulnerable to risks in agricultural production. Several organizational prototypes are emerging to integrate them into the value chain with the objectives of enhancing incomes and reduction in transaction costs. One such alternative is Farmer Producer Organizations (Bikkina., 2018). Volatility in agricultural markets disproportionately affects smallholder farmers. Onion and pulses are particularly vulnerable due to supply shocks and price-sensitive consumption. The Government of India operationalized the Price Stabilization Fund to buffer these fluctuations. MAHA FPC was entrusted as a key implementing agency in Maharashtra under this scheme.

Farmer Producer Companies (FPCs) was formed in Maharashtra in 2014 and has since experienced significant growth. Beginning with just 11 FPCs, the MAHA Farmers Producer Company Ltd. (MAHAFPC) has evolved into the country's largest FPC federation, now operating across 28 districts and comprising over 600 member FPCs. The federation's business model centers on organizing member FPCs by key commodities such as pulses, onions, and soybeans. It plays a vital role in facilitating Minimum Support Price (MSP) procurement for both state and central government agencies. A notable initiative includes its collaboration with the National Agricultural Cooperative Marketing Federation of India Ltd. (NAFED), through which it has developed extensive warehousing facilities via its members to support the procurement and storage of onions under the "Mahaonion" initiative. Recognizing the challenges of depending solely on government partnerships, the organization's leadership is striving to expand its business-to-corporate (B2C) ventures, drawing on its experience from business-to-government (B2G) engagements (Kanitkar 2023). In this context, MAHA-FPC, a state-level consortium of Farmer Producer Organizations (FPOs) in Maharashtra, has played a critical role in aggregating and

marketing pulses and onions through the PSF mechanism. To address such concerns, the Government of India implemented the Price Stabilization Fund (PSF), which aims to buffer market fluctuations and ensure fair returns to farmers while maintaining stable prices for consumers.

The present study focuses on the trends in pulse production, onion procurement, and quality recovery under the Price Stabilization Fund (PSF) scheme, with a specific emphasis on MAHA-Farmer Producer Company (MAHA-FPC), a state-level consortium of FPOs operating in Maharashtra. The Objectives of the research study are as follows; 1. To analyze the trends in pulse production under the Price Stabilization Fund (PSF) scheme from 2019–20 to 2022–23, with a focus on MAHA-FPC operations in Maharashtra. 2. To assess the scale and pattern of onion procurement through PSF and private trade mechanisms over five harvesting seasons (R-18 to R-23). 3. To evaluate the quality recovery performance of A-grade and B-grade onions procured under PSF-R24 across various Farmer Producer Companies (FPCs) affiliated with MAHA-FPC (MAHA FPC., n.d.).

2. Literature Review

2.1 Role of FPOs in agricultural marketing and procurement:

Agriculture holds a central place in India's economy, serving as the primary livelihood source for over 58% of rural households. The sector contributes approximately 16% to the national GDP and 10% to total exports. India is a leading global producer of several commodities, including milk, pulses, spices, rice, cotton, and sugarcane. While production levels have improved significantly over the decades, challenges remain in terms of affordability, rising cultivation costs, and inadequate post-harvest infrastructure. These factors continue to impact farmers' income, with the existing marketing systems often failing to ensure fair prices Mohapatra (2017), Farmer Producer Organizations (FPOs) play a pivotal role in promoting the cultivation and marketing of underutilized vegetables in India. These crops offer significant potential for enhancing food security, nutrition, and climate-resilient agriculture due to their adaptability to diverse agro-climatic conditions. FPOs empower smallholder farmers by facilitating collective access to resources, technologies, and markets, thereby improving livelihoods and supporting sustainable farming practices Venkatta kumar, & Vasanthi, (2023).

The COVID-19 pandemic disrupted multiple sectors of the economy, with agriculture facing challenges such as limited financing, transportation restrictions, inadequate storage, and weak market linkages. These disruptions significantly impacted the agricultural supply chain. In response, social enterprises—including Farmer Producer Organizations (FPOs), cooperatives, NGOs, and trusts—stepped in to stabilize the situation (Ragubalan et al., 2021). FPOs played a pivotal role in restoring the agricultural supply chain during the crisis, although they continue to

face structural and operational challenges that require attention to better serve the farming community (Pitchai, 2018).

2.2 Previous studies on PSF effectiveness.

The Price Stabilisation Fund (PSF), introduced by the Indian government to counter price volatility in essential commodities like potato and onion, has drawn both support and criticism. While its objectives include procurement during bumper harvests and maintaining buffer stocks, experts argue that the fund's limited corpus and structural flaws undermine its effectiveness. Critics highlight issues such as insufficient funding, poor timing of implementation, and a lack of participatory mechanisms. Concerns also extend to potential market distortions, weak supply chain infrastructure, and the exclusion of small and marginal farmers. Scholars advocate for sustainable, long-term solutions like contract farming, stronger farmer–industry linkages, and self-managed stabilization models. These insights underscore the need to revisit PSF's design and explore holistic alternatives for protecting farmers from distress sales (Jitendra. (2015). A Parliamentary Standing Committee on Consumer Affairs, Food and Public Distribution recommended the urgent merger of the Price Stabilisation Fund (PSF) and the Price Support Scheme (PSS) to enhance the government's ability to effectively manage price volatility. Presented in its report on the Demand for Grants for the Department of Consumer Affairs, the panel emphasized that integrating both schemes would lead to a more streamlined and efficient approach to price stabilization in agricultural markets. This recommendation highlights the ongoing need for structural improvements in policy implementation to safeguard both producers and consumers from extreme price fluctuations. (PTI. 2023). The Price Stabilisation Fund Scheme (PSFS) was established to protect both consumers and farmers from extreme price fluctuations in essential commodities. The scheme aims to provide financial support for the procurement and distribution of perishable agricultural produce, thereby ensuring price stability and food security. By facilitating timely market interventions, the PSFS seeks to mitigate the adverse effects of price shocks on the agricultural economy (PSC Notes.).

2.3 Importance of decentralized procurement in stabilizing local markets

Farmer Producer Organizations (FPOs) in India face several key challenges, including limited access to finance, inadequate capacity and skill development, lack of infrastructure and modern technology, weak market linkages, and poor price realization. Additional issues include insufficient policy and regulatory support, limited social inclusion and gender equity, and concerns over long-term sustainability and effective governance Uikey, & Patil, (2023).

3. Methodology:

The research methodology is a plan for smooth conducts of research to achieve its stated objectives. The study follows the case study approach and descriptive research design to explain the production and procurement of the MAHA-FPC. The data was collected primary and secondary sources. The primary data was collected through interview schedule of the chairman and CEO of the MAHA-FPC and associated farmers of member FPCs. The secondary data has been collected through company's previous annual report and company websites and Government notifications and PSF guidelines.

4. Results and Discussion:

Based on the data provided from 2019–20 to 2022–23, the overall pulse production in the region has shown significant fluctuations, with a cumulative total of 6,74,434.38 metric tonnes (MT). The highest production was recorded in the year 2021–22, reaching 3,04,619.63 MT, while the lowest was in 2020–21, with just 65,432.75 MT. Among the different pulse crops, Gram clearly dominates, accounting for approximately 95.6% of the total production (6,44,981.55 MT). It reached its peak in 2021–22, producing 3,02,260.08 MT, and remained consistently reported across all four years, indicating its importance and regular cultivation in the region.

Table 1. Year-wise Production of Pulses (2019–20 to 2022–23)

Harvesting Year	Moong (MT)	Urad (MT)	Tur (MT)	Gram (MT)	Total (MT)
2019–20	–	–	26,933.00	92,246.00	1,19,179.00
2020–21	137.53	–	22.75	65,272.47	65,432.75
2021–22	546.70	848.75	964.10	3,02,260.08	3,04,619.63
2022–23	–	–	–	1,85,203.00	1,85,203.00
Total	**684.23**	**848.75**	**27,919.85**	**6,44,981.55**	**6,74,434.38**

Source: MAHA-FPC Annual Report

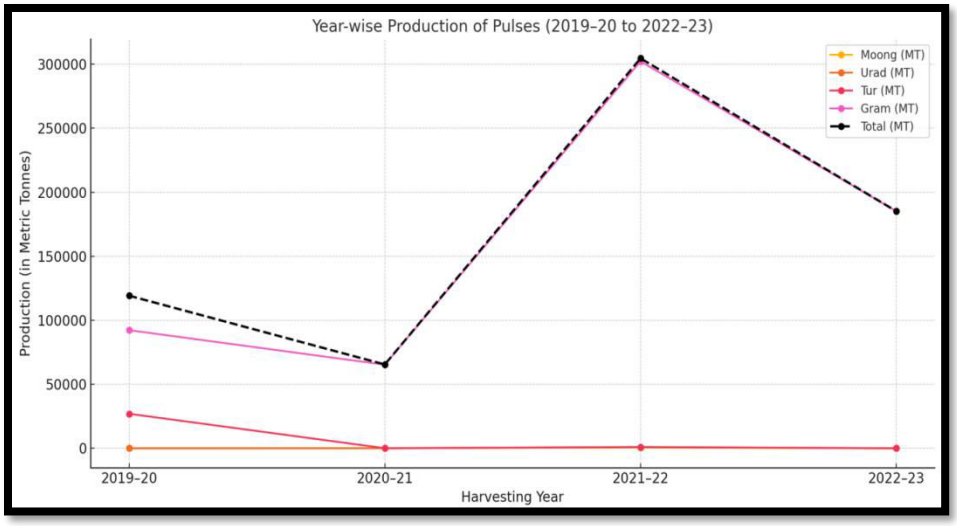

Figure 4.1. Year-wise Production of Pulses (2019–20 to 2022–23)

In contrast, other pulses such as Tur (Pigeon Pea), Urad (Black Gram), and Moong (Green Gram) had significantly lower production figures. Tur contributed 27,919.85 MT, of which nearly all (26,933 MT) was harvested in 2019–20, with a sharp drop in the following years. Urad and Moong had minimal recorded production, reported only in 2021–22 and 2020–21 to 2021–22, respectively, suggesting either limited cultivation or sporadic data collection. Moong totaled 684.23 MT, while Urad stood at 848.75 MT, reflecting their minor role in the region's pulse output.

There are notable data gaps, particularly for Moong, Urad, and Tur in several years, and 2022–23 shows production only for Gram. These gaps may indicate issues in data reporting or reflect changes in cultivation patterns or priorities. The sharp increase in overall production during 2021–22 was primarily driven by the spike in Gram yield and could be attributed to favorable climatic conditions, effective agricultural practices, or policy incentives. Conversely, the sharp decline in 2020–21 may have been influenced by external factors such as unfavorable weather or disruptions due to the COVID-19 pandemic.

In summary, the data underscores the central role of Gram in the region's pulse production, while highlighting the need for better diversification and more consistent data collection. Encouraging the cultivation of other pulses like Moong, Urad, and Tur could help reduce over-reliance on a single crop and enhance the resilience of the agricultural sector. Furthermore, analyzing the conditions that led to the bumper harvest in 2021–22 could provide valuable insights for sustaining high yields in the future.

Table 2. Year-wise Onion Procurement (PSF and Private Trade)

Harvesting Season	PSF Onion (MT)	Interstate / Private Trade (MT)	Total Quantity (MT)
R-18	5,261.00	0.000	5,261.00
R-19	24,773.00	0.007	24,773.01
R-20	37,448.00	0.015	37,448.02
R-21	33,387.80	2,405.00	35,792.80
R-23	17,999.90	130.00	18,129.90
Total	**1,18,869.70**	**2,535.022**	**1,21,404.73**

Source: MAHA-FPC Annual Report

The data on onion procurement over five harvesting seasons (R-18 to R-23) shows a fluctuating trend. The total quantity of onion procured during this period is 1,21,404.73 metric tonnes (MT). The bulk of this procurement was carried out through the Price Stabilization Fund (PSF), which contributed 1,18,869.70 MT, accounting for over 97.9% of the total procurement. The interstate/private trade share remained negligible from R-18 to R-20 (below 0.02 MT), but rose significantly in R-21, reaching 2,405.00 MT, before dropping to 130.00 MT in R-23.

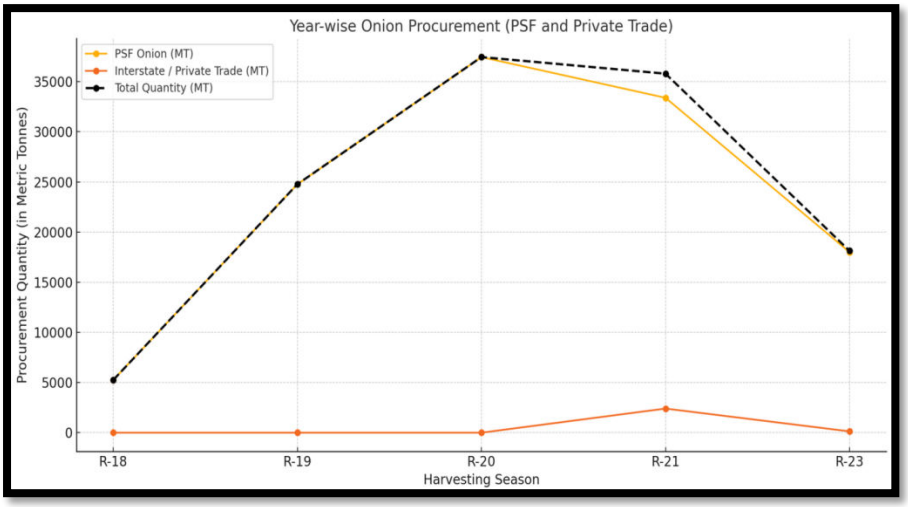

Figure 4.2. Year-wise Onion Procurement (PSF and Private Trade)

The peak in PSF procurement occurred during R-20, with 37,448.00 MT, likely due to policy emphasis or market conditions necessitating greater government intervention. However, procurement declined steadily after that, reaching just 17,999.90 MT in R-23, possibly due to reduced surplus or shifting strategies toward market stabilization. The surge in private trade in R-21 indicates either an increased demand met through non-government channels or a diversification in procurement sources.

Overall, the data suggests that while PSF remains the dominant mechanism for onion procurement, there is scope for integrating more private sector participation. The decline in total procurement in recent years should be examined to ensure it does not affect supply chain stability or price control efforts.

Table 3. A & B Grade Onion Recovery by FPC under PSF-R24

FPC Name	Total Procurement (QTL)	A-Grade Recovery (%)	B-Grade Recovery (%)
Ajinkya Agro FPC	117.80	67.58%	22.07%
Dahiagon Sai Mauli FPC	1300.70	63.10%	22.66%
Godadarna FPC	3021.20	63.02%	22.35%
Maha FPC (Bhimavalley)	297.70	64.90%	22.17%
MMB FPC	189.40	63.55%	23.28%
Mulamai Agro FPC	1203.30	63.02%	22.03%
Punyastambh FPC	4443.70	63.04%	22.08%
Sai Pravara FPC	1579.40	63.03%	22.28%
Unity Orgo FPC	39.70	64.16%	24.26%
Vaishnavdham FPC	1842.40	63.04%	22.85%
Virtual FPC	3578.25	63.04%	22.04%
Total/Average	**17613.55**	**63.11%**	**22.28%**

Source: MAHA-FPC Annual Report

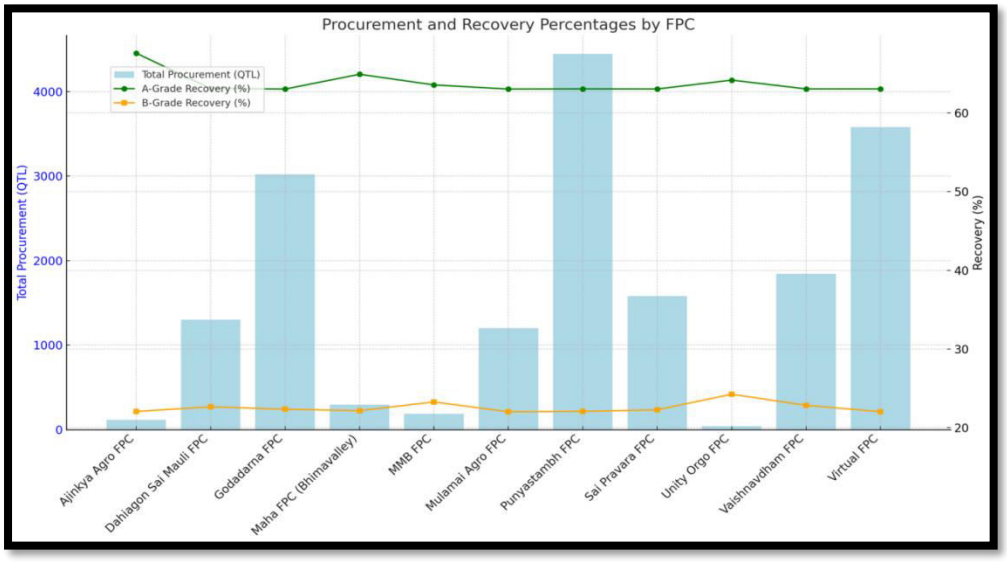

Figure 3. A & B Grade Onion Recovery by FPC under PSF-R24

The analysis of A and B grade onion recovery under PSF-R24 reveals a consistent pattern across the 11 Farmer Producer Companies (FPCs). The total procurement was 17,613.55 quintals, with an average A-grade recovery of 63.11% and a B-grade recovery of 22.28%. Among the FPCs, Ajinkya Agro FPC recorded the highest A-grade recovery at 67.58%, suggesting effective post-harvest handling and quality maintenance, despite its relatively small procurement volume (117.80 quintals). Unity Orgo FPC had the highest B-grade recovery at 24.26%, which may indicate a lower overall quality or more lenient grading standards.

Major contributors to procurement include Punyastambh FPC (4443.70 QTL), Godadarna FPC (3021.20 QTL), and Virtual FPC (3578.25 QTL)—all of which maintained A-grade recovery close to the average. This suggests a balance between scale and quality in their operations. The data shows relatively narrow variation in grade recovery rates, indicating consistent quality control practices across FPCs. However, opportunities exist for further improving A-grade recovery, especially among FPCs with large volumes. Training in grading standards, improved storage, and post-harvest handling practices could help improve outcomes.

Overall, the recovery data underscores the importance of capacity building and standardized practices to enhance the value and marketability of onions procured under government schemes like PSF.

5. Conclusion:

The analysis of pulse production, onion procurement, and quality recovery under the PSF scheme from 2019–20 to 2022–23 highlights key agricultural trends and operational outcomes in the region. Pulse Production demonstrates a clear dominance of Gram, accounting for over 95% of total pulse output. The peak in 2021–22 suggests favorable agro-climatic or policy conditions during that year. However, the production of other pulses like Tur, Moong, and Urad remains marginal and inconsistent, emphasizing the region's over-dependence on a single crop. This calls for diversification strategies to enhance food security and income stability for farmers.

In terms of Onion Procurement, the Price Stabilization Fund (PSF) played a major role, contributing nearly 98% of total procurement across five harvest seasons. The data reflects a peak in PSF procurement in R-20, followed by a steady decline, possibly due to changing market dynamics or reduced surplus. A notable rise in private trade during R-21 suggests an increasing role for non-government stakeholders, indicating potential for broader market engagement and competition.

The A & B Grade Onion Recovery under PSF-R24 reveals a consistent and stable quality recovery pattern across 11 FPCs, with an average A-grade recovery of 63.11%. While some FPCs like Ajinkya Agro show high efficiency, others maintain recovery rates close to the average, indicating uniform standards. However, there

remains room for improving grading efficiency through training, better storage, and handling practices. Overall, the data underscores the significance of Gram cultivation and the effectiveness of the PSF in market stabilization, but also reveals the need for greater crop diversification, enhanced private sector participation, and capacity building among FPCs. By addressing these areas, the region can achieve more balanced agricultural growth, improve resilience, and strengthen its value chains.

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