



EFFECTS OF THE 2025 NUTRIENT-BASED SUBSIDY REVISIONS ON FERTILIZER USE, CROPPING PATTERNS AND CROP YIELDS: INSIGHTS FROM KHARIF 2025 IN INDIA

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ABSTRACT

India's agricultural sector is set for a significant boost with the announcement of the Nutrient-Based Subsidy (NBS) rates for the Kharif season of 2025, applicable from 1 April to 30 September, covering Phosphatic and Potassic (P&K) fertilizers. The government has allocated approximately Rs. 37,216.15 crore under this scheme, an increase of Rs. 13,000 crore compared to the Rabi season 2024–25, reflecting its commitment to supporting farmers. The subsidy, extended to fertilizer manufacturers and importers at approved rates, ensures that fertilizers are available to farmers at controlled and affordable prices. The government is making available 28 grades of P&K fertilizers to farmers at subsidised prices through fertiliser manufacturers/importers. For Kharif 2025, the approved subsidy rates are Rs. 43.02 per kg for Nitrogen (N), Rs. 43.60 for Phosphorus (P), Rs. 2.38 for Potash (K), and Rs. 2.61 for Sulphur (S). The present study examines the effects of these revisions on fertilizer use, cropping patterns, and crop yields, offering insights into their potential role in improving productivity and sustainability in Indian agriculture. The policy recommendations emerging from this analysis include encouraging balanced nutrient application, strengthening monitoring of fertilizer distribution, promoting awareness on efficient fertilizer use, and integrating subsidies with soil health management programs to maximize long-term benefits.

KEYWORDS: Nutrient-Based Subsidy (NBS), Fertilizer Policy, Phosphorus, Sulphur, Nitrogen, Potash, Cropping Patterns, Crop Yields, Kharif 2025, India.

INTRODUCTION

The Government of India introduced the Nutrient-Based Subsidy (NBS) scheme on 1 April 2010 for phosphatic and potassic (P&K) fertilizers with the objectives of ensuring national food security, enhancing agricultural productivity, and promoting the balanced use of fertilizers. Under this scheme, a fixed subsidy is provided on P&K fertilizers, including di-ammonium phosphate (DAP), based on their nutrient content. The subsidy rates are reviewed on an annual or bi-annual basis and announced per kilogram for each nutrient—Nitrogen (N), Phosphorus (P), Potash (K), and Sulphur (S). These per kilogram rates are then converted into per ton subsidies depending on the nutrient composition of each fertilizer grade. While the P&K sector has been decontrolled, allowing fertilizer companies to determine maximum retail prices at reasonable levels, the government monitors these prices to ensure affordability (Department of Fertilizers, 2025).

On 28 March 2025, the Union Cabinet approved revised NBS rates for the Kharif season, effective from 1 April to 30 September 2025. The total subsidy allocation for this season stands at Rs. 37,216.15 crore, which is about Rs.13,000 crore higher than the allocation for the Rabi season of 2024–25 (Press Information Bureau, 2025). With the recent approval of revised subsidy rates, farmers will continue to access fertilizers at affordable prices. The government has also extended the freight subsidy on Single Super Phosphate (SSP) for the Kharif 2025 season to reduce the financial burden. The subsidies on Phosphatic and Potassic fertilizers will be disbursed as per the approved NBS rates, ensuring uninterrupted supply of these vital agricultural inputs. Under the NBS framework, 28 grades of P&K fertilizers—including Di-Ammonium Phosphate (DAP, 18-46-0), Muriate of Potash (MOP), Mono Ammonium Phosphate (MAP, 11-52-0), Triple 19, and other complex fertilizers—are covered. In addition, the government continues to provide direct subsidies to fertilizer manufacturers and importers, thereby maintaining affordability irrespective of international price volatility in raw materials such as Urea, DAP, MOP, and Sulphur (Ministry of Chemical and Fertilizers, Govt. of India, 2025). The key benefits of the NBS scheme include: (a) ensuring the availability of fertilizers to farmers at subsidized and affordable prices, (b) encouraging balanced fertilization and improving nutrient use efficiency, and (c) reducing the overall subsidy burden on the government while promoting sustainable agricultural



growth. By incentivizing balanced soil fertilization, the scheme contributes to improved agricultural productivity and better farmer incomes. It further ensures that fertilizers are utilized efficiently with minimal environmental losses by targeting specific crop nutrient requirements. Moreover, timely subsidy payments to manufacturers minimize administrative delays and ensure uninterrupted fertilizer availability to farmers. Overall, the NBS scheme supports long-term soil fertility, promotes environmental sustainability, and strengthens the foundation of India's agricultural sector (PIB, 2025)

The present paper aims to examine the effects of the 2025 Nutrient-Based Subsidy revisions on fertilizer use, cropping patterns, and crop yields, with specific insights from Kharif 2025 in India. To facilitate this analysis, a comparative assessment of NBS rates (Rs. per kg of nutrients) from Kharif 2021 to Kharif 2025 has been made.

REVIEW OF LITERATURE

Research on fertilizer policies and nutrient management in India has highlighted the critical role of subsidies in shaping fertilizer use, cropping patterns, and crop yields. Several studies have examined historical trends in the Nutrient-Based Subsidy scheme, its impacts on agricultural productivity, and associated environmental considerations.

1. **Gulati and Banerjee (2015)** explain that agricultural subsidies are a global phenomenon, prevalent in developed nations such as the United States, members of the European Union, Japan, and Korea, as well as in emerging economies like China and India. In India, fertilizer subsidies have historically boosted fertilizer use and food grain production. However, they also highlight three persistent concerns: the rising fiscal burden of subsidies, imbalances caused by disproportionately low urea prices leading to skewed NPK use, and limited private investment in the domestic fertilizer sector. The authors propose alternative policy options, including direct cash transfers to farmers on a per-hectare basis, liberalization of the urea sector with market-based pricing, and a comprehensive soil health management program.
2. **Munshi et al. (2024)** analyze the equity of fertilizer subsidy distribution using Lorenz curve and Gini coefficient methods. Their study finds that subsidies are relatively equitably distributed, with paddy and wheat receiving the largest share. Eliminating subsidies would significantly increase cultivation costs, particularly in states such as Punjab and Bihar, and would disproportionately affect staple crops like rice and wheat.
3. **The Indian Council of Agricultural Research (ICAR, 2024)** emphasizes the role of balanced fertilization in improving crop performance. Nutrient-responsive crops such as rice, maize, and cotton show significant yield responses when provided with balanced fertilization. However, these gains are conditional on the simultaneous availability of irrigation and complementary inputs. Without such support, the effectiveness of fertilization remains limited.
4. **Mangodiya et al. (2025)** highlight the challenges facing Kharif crops, which form the backbone of India's agricultural system by supplying essential food resources and generating employment. They note that cultivation is constrained by climate variability, water shortages, and pest infestations. To address these challenges, the integration of modern technologies such as precision farming, drone-based monitoring, and genetically improved crop varieties is suggested. With robust policy support and sustainable practices, India can enhance the productivity, profitability, and resilience of Kharif agriculture.
5. **Sapkota and Singh (2025)** note that Indian fertilizer policy, introduced in the 1950s, has been central to ensuring food security, shaping consumption patterns, enhancing rural incomes, and influencing environmental outcomes. Fertilizer use rose significantly alongside food grain production, with per capita wheat availability improving even amid rapid population growth. However, the excessive reliance on subsidized urea has resulted in nutrient imbalances, efficiency losses, and environmental risks such as nitrous oxide emissions.

RESEARCH GAP

While several studies have analyzed the Nutrient-Based Subsidy scheme in India, most focus on past subsidy structures, fertilizer consumption, or crop-specific impacts. Very few studies address the recent 2025 NBS revision and its potential theoretical effects on fertilizer use, cropping patterns, and crop yields, particularly for Kharif 2025. Furthermore, most studies examine short-term outcomes or historical trends, with limited attention to how recent changes in subsidy rates might influence overall nutrient balance and agricultural productivity. This study addresses this gap by integrating official NBS data with insights from relevant research to provide a theoretical analysis of the implications of the 2025 revision on fertilizer use, cropping patterns, and crop yields across India.



OBJECTIVES OF THE STUDY

The objective of the present study is to analyze the impact of the 2025 Nutrient-Based Subsidy revisions on fertilizer use, cropping patterns, and crop yields during Kharif 2025 in India.

METHODOLOGY

The present study is primarily based on secondary data collected from a wide range of published and unpublished sources. Various journal articles, research papers, working papers, and newspapers were reviewed to provide theoretical context. The present study tries to examine the effects of the 2025 NBS revision on fertilizer use, cropping patterns, and crop yields during Kharif 2025. Secondary data on subsidy rates for Nitrogen, Phosphate, Potash, and Sulphur from 2021 to 2025 were collected from FertiliserIndia.com and government notifications. This study conducts a comparative analysis of Nutrient-Based Subsidy rates for N, P, K, and S across the Kharif seasons from 2021 to 2025.

DATA ANALYSIS AND DISCUSSION

The trajectory of the Nutrient-Based Subsidy from Kharif 2021 to Kharif 2025 highlights the government's attempts to balance fertilizer affordability, fiscal pressure, and soil nutrient management.

A closer look at each nutrient reveals both progress and persistent gaps. Table 6.1 presents the subsidy rates (Rs. per kg of nutrient) for Nitrogen (N), Phosphate (P), Potash (K), and Sulphur (S) across Kharif seasons from 2021 to 2025.

A. Nitrogen (N)

The nitrogen subsidy shows sharp fluctuations. From a low of Rs.18.789/kg in Kharif 2021, it surged almost five-fold to Rs.91.96/kg in 2022, before gradually declining to Rs.43.02/kg in 2025. The sharp spike in 2022 was a government response to global fertilizer price shocks, which ensured that urea remained affordable and prevented a large-scale shift away from nitrogen-intensive crops like paddy. By Kharif 2025, the stabilization of subsidy around Rs.43.02/kg suggests a partial rollback of that support.

- a) **Impact on cropping pattern:** With stable and moderate nitrogen support, farmers are likely to continue allocating large areas to paddy, the most nitrogen-responsive crop in the Kharif season.
- b) **Impact on yield:** Adequate nitrogen support in 2025 is expected to sustain yields in cereals, though declining subsidy compared to 2022–23 may limit excessive nitrogen use and encourage more balanced fertilization.

B. Phosphate (P)

Phosphate subsidy has been highly volatile. It peaked at Rs.72.74/kg in 2022, dropped by more than 60% to Rs.28.72 in Kharif 2024, and rebounded to Rs.43.60/kg in 2025 — a 51.8% increase over the previous Kharif. This recovery is significant because phosphate is critical for root development and grain formation in crops like paddy, maize, and pulses.

- a) **Impact on cropping pattern:** The sharp rise in phosphate subsidy in 2025 will reduce the retail price of DAP and complex fertilizers, encouraging farmers to maintain or expand area under phosphate-responsive crops.
- b) **Impact on yield:** Higher Phosphate affordability is expected to improve nutrient balance and boost yields, particularly in rainfed districts where phosphate application is often sub-optimal.

C. Potash (K)

The potash subsidy presents the starkest decline. After being relatively strong in 2022 (Rs.25.31/kg), it fell to Rs.15.91 in 2023 and stagnated at only Rs.2.38/kg from Kharif 2024 onward. This represents a reduction of over 90% compared to 2022 levels.

- a) **Impact on cropping pattern:** With negligible subsidy, Muriate of Potash (MOP) prices remain high, discouraging farmers from applying potash adequately. This may result in reduced preference for K-intensive crops like sugarcane and certain pulses.
- b) **Impact on yield:** Persistent under-application of potash could lead to nutrient mining in soils, long-term yield decline, and reduced resilience of crops to abiotic stress. Even in 2025, no recovery in potash subsidy means yield benefits from other nutrients may not be fully realized.

D. Sulphur (S)

Sulphur subsidy has remained marginal compared to N, P, and K, but its trend is noteworthy: from Rs.1.89/kg in Kharif 2024, it increased to Rs.2.61/kg in 2025 — a 38% rise. Though small in absolute terms, sulphur support is significant for oilseeds and pulses, where sulphur plays a role in protein synthesis and oil content.



Table 6.1: Year Wise NBS Rates (Rs. per Kg) during 2021-2025

Sr. No.	Nutrients	Kharif 2021	Kharif 2022	Kharif 2023	Kharif 2024	Kharif 2025
1	N	18.789	91.96	76.49	47.02	43.02
2	P	45.323	72.74	41.03	28.72	43.60
3	K	10.110	25.31	15.91	2.38	2.38
4	S	2.374	6.94	2.80	1.89	2.61

Source: FertiliserIndia, 2025

Note: N stands for Nitrogen

P stands for Phosphate

K stands for Potash

S stands for Sulphur

- a) **Impact on cropping pattern:** A modest boost in sulphur affordability may encourage greater application in oilseeds like soybean and groundnut, indirectly promoting area expansion under these crops.
- b) **Impact on yield:** Even small improvements in sulphur use can translate into higher yields and quality gains in oilseeds, though the overall effect remains limited due to the low subsidy quantum. Overall, the 2025 NBS is expected to favour cereals (paddy, maize), pulses, and oilseeds, where P and S responsiveness is high, while crops like sugarcane and cotton, with higher K demand, may suffer from nutrient imbalance. Yield improvements are thus likely to be uneven, concentrated in phosphate- and sulphur-responsive crops, while long-term soil health challenges could intensify due to persistent under-application of potash.

POLICY IMPLICATIONS

The comparative analysis of NBS rates for Kharif seasons from 2021 to 2025 underscores several important policy implications for India's fertilizer management, agricultural productivity, and long-term soil health.

1. Stabilisation of Nitrogen Subsidy

The moderation of nitrogen subsidy from extreme highs in 2022 to a stable Rs.43.02/kg in Kharif 2025 reflects an important balancing act. This ensures that nitrogenous fertilizers remain affordable for farmers, maintaining production stability. However, it also signals a shift away from excessive subsidisation, which in the past encouraged overuse and created nutrient imbalances. The nitrogen subsidy must now be complemented with strong extension services and awareness campaigns to promote judicious application, thereby improving nutrient-use efficiency.

2. Revival of Phosphate Support

The sharp recovery of phosphate subsidy to Rs.43.60/kg in Kharif 2025, after a severe decline in 2024, demonstrates the government's responsiveness to affordability concerns. This move helps restore balance in fertilizer use and prevents widespread under-application of phosphate. The key policy implication here is that subsidy design should avoid sharp year-to-year fluctuations. Predictability in support levels is essential for farmers' planning, input markets, and balanced nutrient application.

3. Structural Weakness in Potash Subsidy

Potash support has eroded drastically, collapsing to only Rs.2.38/kg since Kharif 2024. This persistent neglect represents a structural weakness in the subsidy framework. The long-term policy implication is that sustained under-support for potash could offset gains achieved from nitrogen and phosphate subsidies, creating hidden productivity losses over time. A rebalanced subsidy framework is therefore essential to address this gap.

4. Incremental Recognition of Sulphur

The rise in sulphur subsidy to Rs.2.61/kg in Kharif 2025, though modest in scale, reflects a gradual policy shift towards recognising secondary nutrient requirements. The implication is significant: as India's soils increasingly show deficiencies beyond NPK, subsidy frameworks must evolve into a multi-nutrient strategy. Expanding support for secondary and micronutrients, even in incremental steps, can contribute to long-term soil health and sustainable yields.

5. Towards Balanced and Sustainable Fertilization:

Taken together, the 2025 NBS revision signals an effort to move towards balanced fertilization by strengthening phosphate and sulphur affordability, while maintaining nitrogen at a moderate level. However, the persistent weakness in potash support undermines this balance. Policymakers should consider strategic directions such as: (i) Recalibrating



subsidy allocation to avoid over-reliance on nitrogen while ensuring adequate support for phosphate and potash (ii) Introducing nutrient-balance incentives that reward farmers for adopting recommended N:P:K:S ratios (iii) Linking subsidies with soil health data, ensuring that support is targeted where deficiencies are most acute (iv) Ensuring subsidy stability across seasons, so that affordability is not disrupted by sudden shifts in global or domestic markets.

CONCLUSION

The NBS scheme, introduced to promote balanced fertilization, links government support directly to the nutrient content of fertilizers rather than product-wise allocations. The comparison of Kharif 2021–2025 highlights how revisions in NBS rates have reshaped nutrient affordability and, by extension, cropping decisions. Nitrogen subsidy, which had spiked to Rs.91.96/kg in Kharif 2022, was gradually reduced and has now stabilized at Rs.43.02/kg for both Kharif 2024 and 2025. Phosphate, after dropping to a low of Rs.20.82/kg in Rabi 2023–24, has partially recovered to Rs.43.60/kg in Kharif 2025, signaling renewed policy emphasis on phosphorus use. These adjustments in the recent revision indicate a shift toward stability and correction after years of volatility. In contrast, the NBS revision for potash reflects a prolonged under-support, with the rate remaining at just Rs.2.38/kg since Rabi 2023–24, compared to Rs.25.31/kg in Kharif 2022. Sulphur shows a marginal rebound in Kharif 2025 (Rs.2.61/kg), though still far below earlier levels such as Rs.6.94/kg in 2022.

The overall picture suggests that the 2025 NBS revision seeks to restore balance in some nutrients while leaving structural gaps in others. By stabilizing nitrogen and reviving phosphate, the scheme may encourage more consistent application of primary nutrients, yet the neglect of potash risks long-term soil health and yield sustainability. This reinforces the critical role of NBS revisions in shaping not only immediate fertilizer affordability but also the broader trajectory of Indian agriculture's nutrient balance and productivity outcomes.

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