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Impact of West-Asia war on Indian agriculture

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Abstract
The ongoing conflict has certainly impacted global agricultural supply chains though to different extent depending upon the country's geographical location, existing stockpiles, and governmental interventions. Most direct impact is noticed on fertiliser prices across the globe. Its cascading effect will be felt in the months to come. There is a high likelihood that increased price of fertilisers and rising energy costs could lead to food inflation due to lesser amount of fertiliser application resulting in lower crop acreage and subsequent lower crop production. In long run, it could affect country's economy and food security. However, the extent of impact would depend upon the duration of the conflict. Considering the damage that the war has caused to infrastructure, it is certain that considerable time would be required to return to pre-conflict production levels.

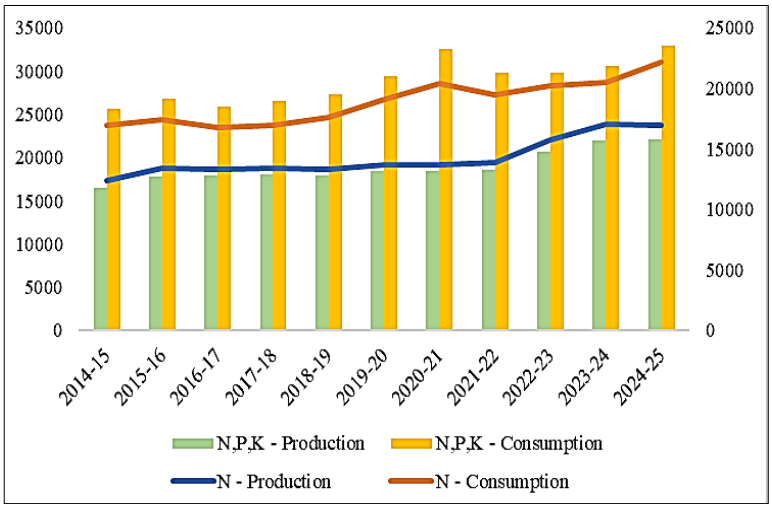
Keywords: West-Asia war, Middle East, agricultural impact, fertiliser prices, food security

Introduction
India Agriculture, backbone of Indian economy and source of livelihood for millions, is in distress. It contributes about 18% to Indian GDP and over half of Indian population is dependent on Agriculture. It is highly prone to wide range of events, both national and global, such as availability of various agricultural inputs, weather, trade, supply chains, government policies, etc. Disruptions in any of these can have a significant effect on the livelihoods of Indian farmers since for majority of them there is no secondary source of income. One such event that is currently having a major impact on farmers' livelihoods and is expected to worsen in future is the ongoing West-Asia war, which is well into its second month.

Indian agriculture is predicted to be impacted primarily due to disrupted agricultural supply chains especially due to fertiliser availability, reduced exports of agricultural produce, higher transportation costs etc. These in turn may affect the net food availability resulting in altered food security scenario. The degree to which these would be affected depends upon the duration of war. India's fertiliser market is entering the Kharif 2026 season under one of the most complex and uncertain operating environments in recent years, driven by the simultaneous impact of monsoon variability, structural nutrient imbalances, and heightened geopolitical risks affecting global supply chains. Although India has entered the season with relatively comfortable opening inventory levels, the fertiliser sector continues to remain fundamentally vulnerable due to its heavy reliance on imported liquified natural gas (LNG), phosphatic feedstocks, and potash. These structural dependencies expose the sector to external shocks, particularly in the context of ongoing tensions in West Asia.

The overall outlook for the Kharif season is expected to be determined by three critical factors - the extent of rainfed acreage influenced by monsoon performance, the stability of logistics and supply chains in the Middle Eastern region, and movements in global feedstock prices. The interaction of these factors will play a decisive role in shaping fertiliser availability, subsidy burdens, crop yields, and ultimately post-harvest commodity prices. Given these dynamics, the fertiliser market is expected to remain highly sensitive to both domestic climatic conditions and international geopolitical developments.

India's Fertiliser Market: Structure, Seasonality and Demand Pulse: Global fertiliser consumption has increased significantly over the years. According to Food and Agriculture Organization (1), it was a mere 42.6kg/ha in 1966 while in 2022 it stood at 134.2 kg/ha. Corresponding numbers for India are 6.9 and 193.8 kg/ha, respectively. While the global consumption during this period has seen a three-fold increase, India's consumption has increased by a whopping 28-fold. Though India's production has increased drastically, it has been historically a net importer of fertilisers as can be seen from Fig 1.



Source: Department of Fertilisers, Ministry of Chemicals & Fertilisers, Govt. of India

Fig 1: Fertiliser Production and Consumption (Thousand tons of nutrients) in India

The Indian fertiliser market is structurally characterized by its heavy dependence on the Kharif cropping season, which accounts for about 38 million metric tonnes (MMT), or nearly 55-60% of the country's annual fertiliser consumption (Table 1). This seasonal concentration of demand makes the fertiliser sector particularly sensitive to monsoon performance, as a significant portion of agricultural activity is rain-dependent.

Table 1: Season-wise India's fertiliser demand and nutrient balance (in MMT)

Season	Urea	DAP	NPK	MOP	Total (Approx.)
Kharif	20 - 21	6.0 - 6.5	8.0 - 8.5	1.4 - 1.6	36 - 38
Rabi	14 - 15	3.0 - 3.5	5.0 - 5.5	0.7 - 0.9	23 - 25
Zaid	2.0 - 2.5	0.5 - 0.8	1.0 - 1.2	0.2 - 0.3	4.0 - 5.0
Total (Approx.)	36 - 38	10 - 11	14 - 15	2.5 - 3.0	62 - 65

Source: Department of Fertilisers, Ministry of Chemicals & Fertilizers, Government of India.

The demand for fertilisers in India is not only influenced by climatic conditions but also by farmers' behaviour as shown in Table 2, which tends to be highly adaptive in response to input availability and pricing pressures. Irrigated regions, which account for nearly 65-70% of total fertiliser demand, exhibit relatively stable consumption patterns, while rainfed regions contribute to annual demand fluctuations of approximately 3-5 MMT, depending on monsoon performance. During periods of fertiliser shortages or elevated input costs, farmers often respond by modifying cropping patterns rather than merely reducing fertiliser application rates. A common trend observed is the shift away from nutrient-intensive crops such as paddy, cotton, and maize towards a relatively low-input crops such as pulses and oilseeds. This transition is economically rational, as pulses have the natural ability to fix atmospheric nitrogen, thereby reducing dependence on nitrogen-based fertilisers such as urea, which constitutes a major share of total fertiliser consumption.

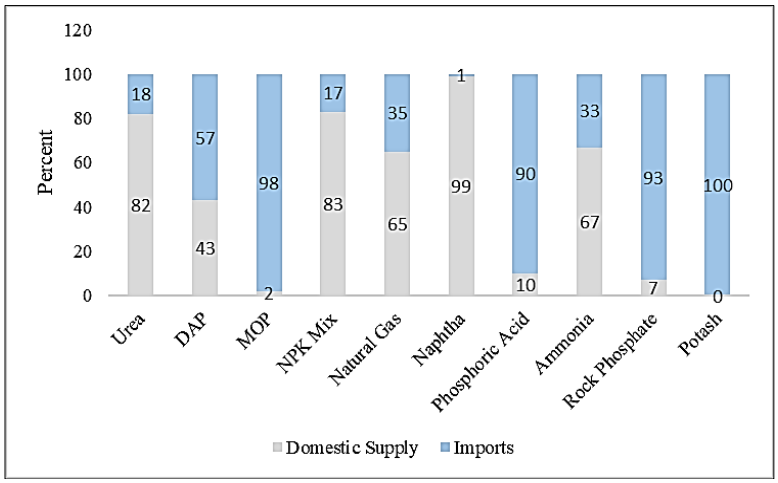
Table 2: Fertiliser demand, stability, and volatility under rainfed and irrigated conditions

Category	Quantity (MMT)	Share	Nature	Swing (MMT)
Irrigated	42-45	65-70%	Stable	1-2
Rainfed	20-23	30-35%	Volatile	2-4
Total	~65	100%	Subjective to rainfed acreage	2-3

Source: The Fertiliser Association of India

In general, India depends on fertiliser imports to a large extent (Fig 2) especially diammonium phosphate (DAP) and Muriate of potash (MMP). Urea accounts for the largest share with total demand of 37.5 MMT, supported by strong domestic production of 31 MMT, resulting in relatively lower import dependency of 18%. However, this "apparent" self-sufficiency is offset by a significant dependence on natural gas, requiring about 18-19 billion cubic meters (BCM) of gas, of which 30-35% is met through LNG imports. This creates indirect exposure to global energy markets, particularly given that fertilisers account for nearly 30-31% of total natural gas consumption in India. As a

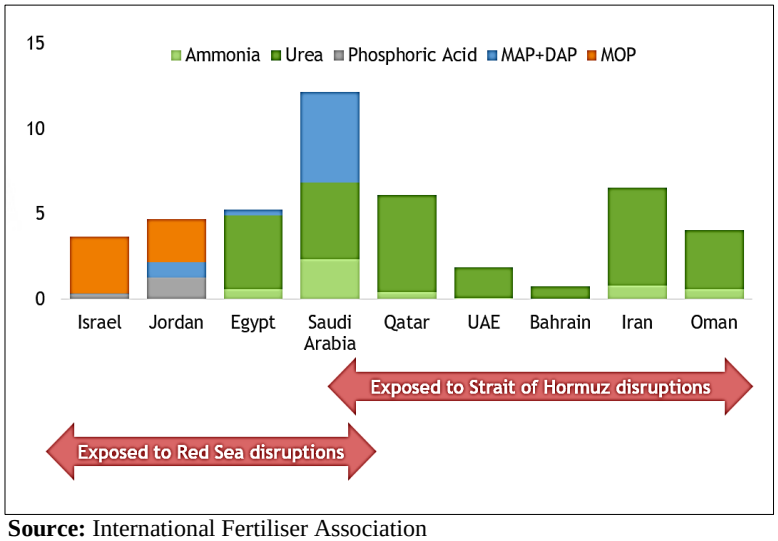
result, any disruption in LNG supply or price volatility directly impacts domestic urea production economics. In contrast, DAP exhibits a demand of 10.5 MMT, with domestic supply limited to 4.5 MMT, leading to significantly higher import reliance of 57%. Additionally, DAP production is heavily reliant on imported phosphoric acid and phosphate rock, with feedstock dependency levels as high as 85-90%, further amplifying exposure to global supply chain disruptions. MOP remains the most vulnerable segment, with demand of 2.8 MMT being entirely met through imports, reflecting 100% import dependency due to negligible domestic production. The absence of meaningful domestic production makes MOP highly sensitive to global supply conditions, particularly given the concentration of supply among a limited number of exporting countries. NPK fertilisers show comparatively balanced dynamics, with a demand of 14.8 MMT and domestic supply of 12.3 MMT, resulting in lower import dependency of 17%, although indirect feedstock reliance persists. However, this apparent stability masks significant indirect dependency, as production relies heavily on imported phosphates and potash, thereby exposing the segment to upstream supply risks.



Source: The Fertiliser Association of India; Department of Fertilisers, Ministry of Chemicals & Fertilizers, Government of India

Fig 2: Domestic supply vs import reliance of key fertilisers and feedstock

In 2024, about 30% of global fertiliser trade passed through the Strait of Hormuz from the Persian Gulf to export markets around the world, as well as an estimated 20% of liquified natural gas (LNG), a key fertiliser feedstock. The other key supply route being Red sea. With both being affected (Fig 3) due to ongoing West-Asia war, there has been a severe disruption in global fertiliser supply chain. Countries upstream of the Strait of Hormuz account for huge share of global trade - 23% of Ammonia, 34% of Urea, 49% of Sulphur, and 18% of Mono & Di ammonium phosphate. A major portion of these exports have been affected. Apart from direct supplies being affected, curtailments of natural gas exports to South Asian countries such as India, Pakistan, and Bangladesh have led to lower levels of domestic fertiliser production in these countries. This multi-layered dependency creates a structurally fragile supply chain, where disruptions at any stage - whether in raw materials, intermediate products, or logistics can significantly impact fertiliser availability and pricing.



Source: International Fertiliser Association

Fig 3: Fertiliser exports (in MT) by country during 2024

However, India has entered Kharif 2026 with a relatively strong inventory position, with total fertiliser stocks increasing by approximately 36.67% year-on-year. DAP inventories have surged by 117.92%, while NPK stocks increased by 74.36%, indicating improved supply availability. However, MOP inventories declined by 10.48%, reflecting continued dependence on imports and potential supply tightness in the potash segment. While higher inventory levels provide short-term supply stability, they also have fiscal implications. Rising LNG prices, driven by global energy market conditions, are likely to increase the government's subsidy burden, as urea prices are heavily regulated and insulated from market fluctuations. This creates additional pressure on public finances, particularly in a scenario of sustained high input costs.

Overall fertiliser price index is a weighted average tracking the cost of key nutrients - nitrogen (urea), phosphate (DAP/MAP), and potash - providing a snapshot of global agricultural input costs. It serves as a vital indicator of market volatility, guiding farmers on input affordability, monitoring food security risks, and predicting farm-level operating expenses. The Fertilisers Price Index was reported at about 182-190 in early 2026, up from approximately 128-166 a year earlier. Urea prices saw a dramatic increase of over 75% compared to the same time last year, driven by high demand and supply constraints. Prices of almost all of the commonly used fertilisers have increased tremendously. Urea has seen the sharpest rise by over 50% since the war started and in some markets is trading at about USD 700/ton while Diammonium phosphate, ammonia and ammonia-based products increased by about 20%.

Agricultural Supply Chain Disruption

India is the world's second-largest fertiliser consumer and imports huge volumes of raw materials as well as finished fertilisers. Apart, it is highly dependent on imports for phosphatic fertilisers and almost entire requirements of potash. A significant portion of fertilisers and liquified natural gas, a key input for fertiliser plant is imported from West-Asia and Persian Gulf region. These imports have been affected considerably due to the ongoing conflict in the region. As a result, it is predicted that fertiliser availability to Indian farming sector will be reduced which would reduce crop yields apart from possibly lower crop acreages. Reduced net sown area could have a cascading effect on other agricultural inputs industries such as seeds, agri-chemicals, farm machinery etc. essentially having a significant effect on the economy. Overall, this could lead to increased commodity prices. However, this manuscript doesn't focus on entire agricultural supply chain impacts.

Higher fertiliser prices across the globe result in reduced fertiliser application which could possibly lead to lesser crop acreage and lower crop yields. In such a scenario, not only the fertiliser industry will get affected but, it will have cascading effect on other agricultural input industries such as seed industry, farm machineries etc. Such a situation could potentially affect food security of nations since fertiliser accounts for up to 25% of agricultural commodity production costs. This may have stark effects on agriculture-dependent developing and underdeveloped nations especially across South-East Asia and Africa that can't afford higher fertiliser prices. Across countries small and marginal farmers are facing challenges due to limited fuel supply resulting in not being able to use farm machinery for farm operations. Farmers are in a dilemma whether or not to harvest their crops since the cost of harvesting and post-harvest operations are outweighing returns due to reduced farm prices resulting from excess of available stock and exports facing challenges. Such a situation in long run will lead to skewed distribution of food stocks possibly resulting in hunger and malnutrition across countries. India ranks 102nd out of 123 countries with a score of 25.8 (2), categorizing its hunger level as "serious" in the 2025 Global Hunger Index. More than a third of India's children under the age of five are stunted while wasting affects over 17% (3). With such poor numbers coupled with potential disruptions, India faces a big challenge of ensuring sufficient fertiliser levels such that agricultural production doesn't get affected. Any disruptions in agricultural supply chain will prove disastrous for countries such as India where major population is dependent on agriculture.

Agricultural Exports

According to APEDA (4), India accounts for 2.2%, amounting to about USD 52 billion, of world agricultural exports during 2024 - 25. India is a major supplier of agricultural products to the GCC countries, accounting for nearly 12% of their total imports. Major export commodities include rice, buffalo meat, spices, and fresh fruits/vegetables. Top importing countries include The UAE and Saudi Arabia. India's exports of agricultural commodities to West-Asia is worth about USD 12 billion. They are facing major disruptions due to increased freight charges, stalled containers, higher insurance costs etc. Carriers are applying Emergency Risk Surcharges, Emergency Fuel Surcharges, and War Risk Surcharges to cargo resulting in further increase of transport costs. Perishable commodities such as fruits, vegetables, meat, dairy products etc. that form major part of Indian exports to middle eastern region are facing additional risks of spoilage due to stranded containers. According to various reports, freight costs have increased by about 20 - 40% compared to the pre-conflict period while marine insurance premiums have increased by up to 50%. Transportation costs were further increased due to ships taking longer route, wherever possible, resulting in higher fuel consumption. All these additional costs are driving the commodity prices higher and impacting exports. The prices expected to stay at higher levels even when the war ends since the effects of infrastructural loss to reach normal levels could take many months to restore.

Food Security

The FAO Food Price Index (FFPI) averaged 128.5 (5) points in March 2026, up 3.0 points (2.4%) from its revised February level. It is a measure of the monthly change in international prices of a basket of food commodities. Price indices across all commodity groups cereals, meat, dairy, vegetable oils and sugar rose to varying degrees, reflecting not only underlying market fundamentals but also responses to higher energy prices linked to the conflict escalation in West-Asia. The FAO Cereal Price Index averaged 110.4 points in March 2026, up 1.7 points (1.5%) from February level. The remaining four groups that are used to compute FFPI also showed an increase - FAO Vegetable Oil Price Index - 5.1%, FAO Meat Price Index - 1.0%, FAO Dairy Price Index - 1.2%, and FAO Sugar Price Index - 7.2%. World food prices climbed in March, by 2 - 4%, the second

consecutive month of increases. According to FAO, the prices would continue to rise if the war continues due to rising costs of fuel, fertiliser and related aspects such as transportation, availability etc. However, food inflation in India is still not been seen primarily due to due to cushioning provided by high domestic stockpiles. The price rise has not been phenomenal so far due to availability of buffer stocks with the governments though the real effects would be seen after harvesting of next crop cycle - in about six to eight months. Food security will be primarily felt in most underdeveloped and developing countries across South Asia and Africa that are already at the bottom of global hunger index. Amongst these countries, most vulnerable will be the poor people who are dependent upon government subsidies and support.

The cascading effect of higher input costs leading to lower agricultural production will be a challenge for ensuring food security. In the short to medium run, to ensure food security, it is imperative that commodity stocks are stored and preserved efficiently by minimizing storage losses. The World Food Program has estimated that an additional 45 million people could be pushed into acute food insecurity if the conflict does not end by June 2026. However, this number largely depends upon how long the conflict lasts. According to a report by FAO (6), a one-month conflict would affect only those farmers in the Southern Hemisphere who have not yet purchased fertilisers. A three-month war could affect production and planting decisions for all farmers across the globe. A war extending into 2027 could affect economies' growth trajectories, affecting agricultural productivity and consumers' purchasing power.

Conclusions: Kharif 2026 is expected to be a critical season for India's fertiliser market, with far-reaching implications for agricultural productivity, food security, and economic stability. While strong inventory levels provide temporary relief, the sector's structural vulnerabilities remain a cause for concern. The most likely outcome is a scenario characterized by moderated demand but elevated supply-side risks, which could lead to firmer crop prices in the post-harvest period. In the long term, addressing structural imbalances and reducing import dependency will be crucial for ensuring the sustainability of India's agricultural sector.

To mitigate the risks associated with the current scenario, a multi-stakeholder approach is required. For government institutions, there is a need to diversify import sources, strengthen strategic reserves of key nutrients, and enhance diplomatic efforts to secure stable supply chains. Additionally, fiscal planning must account for potential increases in subsidy requirements. For traders and market participants, close monitoring of global energy markets, freight rates, and geopolitical developments is essential for effective decision-making. For farmers, adopting balanced nutrient application practices and diversifying cropping patterns can help reduce input dependency and improve resilience against supply disruptions.

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