



Changing Trends in Fertilizer Use

For Prelims: Fertiliser, Fertilizer Subsidy, Urea, DAP, Nutrient Based Subsidy (NBS) Scheme

For Mains: Issues Related with Fertiliser Industry and Fertilizer Subsidy and the Way Forward.

[Source: BS](#)

Why in News?

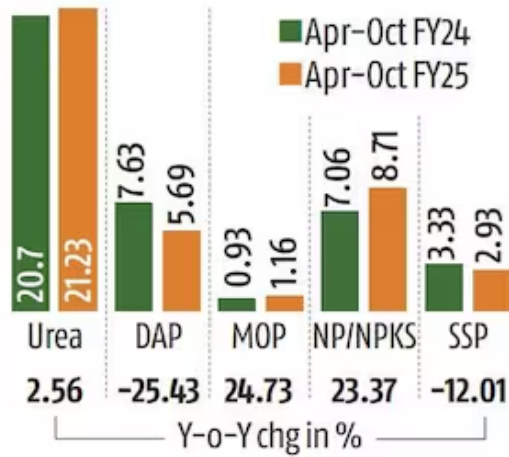
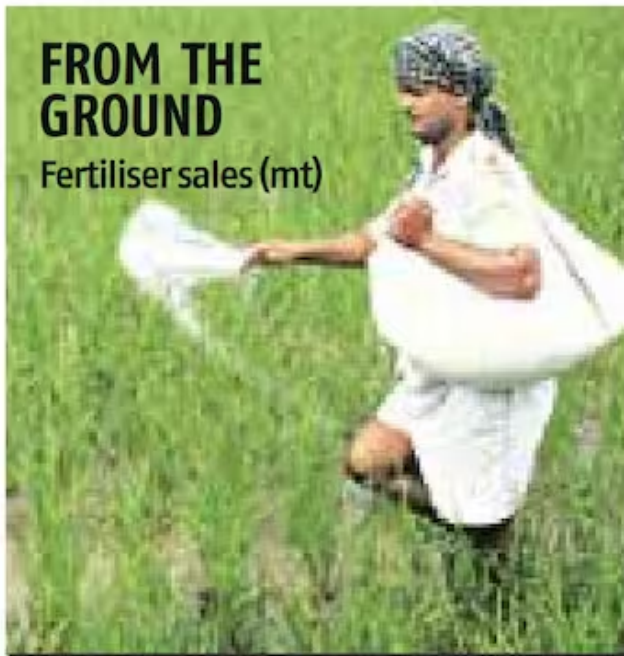
Recently, the sales of fertilisers **Di-Ammonium Phosphate (DAP)**, a key fertiliser for rabi crops, have declined significantly by **25.4% during April to October FY25**, while that of **NPKS (Nitrogen, Phosphorus, Potassium, and Sulphur)** fertilizers **surged by 23.5%** in the same period.

- This shift is largely driven by reduced imports and higher costs of DAP, encouraging farmers to opt for alternatives like NPKS, which provide more balanced soil nutrition.

What are Factors Influencing the Shift in Fertilizer Usage Preferences?

- **Decline in DAP Usage:** The shift is largely driven by **rising costs and supply chain issues** associated with DAP, prompting farmers to seek alternatives.
 - Global challenges like the [Russia-Ukraine war](#) and **Belarus sanctions disrupted potash markets** leading to **rising Muriate of Potash(MOP) prices** in FY23. These countries are among **major producers of potash** in the world.
 - **DAP sales declined by 30%** to 2.78 million tonnes due to the [Persian Gulf crisis](#) which has led to **prolonged shipping delays**, extending transit times from the usual 20-25 days to nearly 45 days.
 - This led to prices for DAP rising to approximately USD 632 per tonne in September 2024.
- **Shift in Fertilizer Preferences:** Farmers are increasingly turning to NPKS fertilizers, which are considered **more beneficial than DAP** due to their **balanced nutrient composition**. The **20:20:0:13 NPKS grade**, offering balanced quantities of nitrogen, phosphorus, potash, and sulphur has seen significant sales growth.

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Note: Decimals have been rounded off; DAP: Di-ammonia phosphate; MOP: Muriate of potash; NP/KS is a combination of nitrogen, phosphorus, potash, sulphur in various grades; SSP: Single super-phosphate
Source: Fertiliser Association of India

Note: Improved fertilizer use enhanced the **NPK ratio in Indian soils to 9.8:3.7:1** in kharif 2024 from **10.9:4.9:1 in kharif 2023**, though still below the ideal **4:2:1** ratio recommended by Fertiliser Association of India (FAI).

What are the Benefits of Using NP/KS Fertilizer?

- **Balanced Nutrient Supply:** NP/KS fertilizers provide a comprehensive supply of essential nutrients- **Nitrogen (N), Phosphorus (P), Potassium (K), and Sulfur (S)**- which are critical for plant growth, enhancing the overall health and productivity of crops.
 - This balance ensures that plants receive adequate nutrients for various growth stages, from vegetative to reproductive phases.
- **Improved Soil Health and Sustainable Agriculture:** : Sulfur, an essential nutrient often deficient in soils, improves root development, enzyme activation, and resistance to diseases.
 - By including sulfur, NP/KS fertilizers enhance soil health and fertility, promoting **more efficient nutrient uptake by plants**.
- **Enhanced Crop Yield:** It helps in **boosting crop yield by improving photosynthesis**, strengthening plant immunity, and promoting better flowering, fruiting, and seed formation. This leads to higher productivity, which is particularly beneficial for food security.
- **Optimal Plant Growth:** It is designed to support overall plant growth, improving root and stem development, increasing **chlorophyll production**, and enhancing drought resistance, which helps crops thrive in varying environmental conditions.

What are the Different Types of Chemical Fertilisers Used in Agriculture?

- **Nitrogenous Fertilisers:** Nitrogenous fertilizers like **Urea (46% nitrogen)**, **Ammonium Sulfate (21% nitrogen, 24% sulfur)**, and **Calcium Ammonium Nitrate (26% nitrogen)** are essential for plant growth, enhancing protein synthesis, chlorophyll formation, and rapid development.
- **Phosphatic Fertilisers:** These are vital for root development, flowering, and seed formation, include **Single Super Phosphate (16-20% P₂O₅, calcium, and sulfur)** and **Diammonium Phosphate (46% phosphorus, 18% nitrogen)**, both enhancing soil fertility and plant growth
- **Potassic Fertilisers:** These are essential for water regulation, enzyme activation, and disease resistance, include **MOP (60% potassium)**, commonly used in India, and **Sulphate of Potash**

(**50% potassium, 18% sulfur**), recommended for chloride-sensitive crops like tobacco, fruits, and vegetables.

- **Complex Fertilisers:** Complex fertilizers, formulated with multiple primary nutrients, include **NPK fertilizers** (e.g., 10:26:26, 12:32:16) for balanced nutrition, **NPKS** (containing nitrogen, phosphorus, potassium, and sulfur), and **Ammonium Phosphate Sulfate (APS)**, which is rich in sulfur, phosphorus, and nitrogen, ideal for sulfur-deficient soils.

What are Government Initiatives Related to Fertilisers?

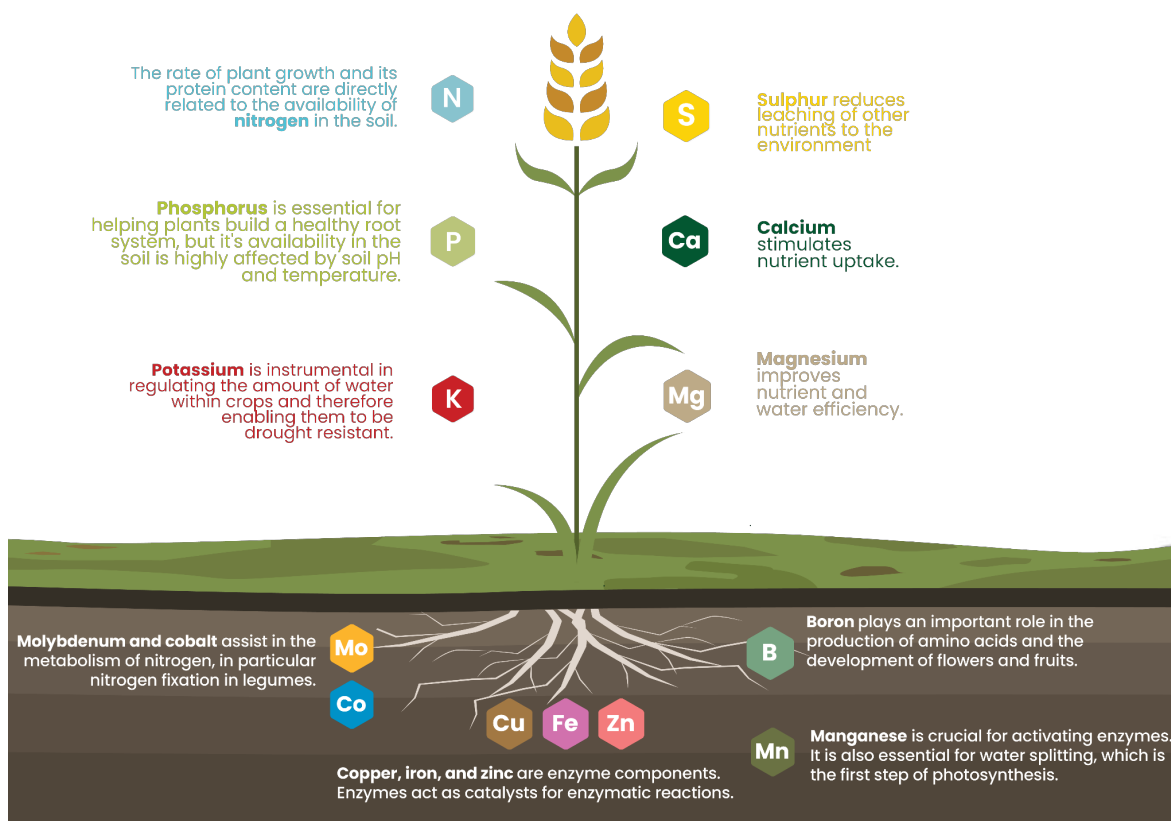
- [PM PRANAM Scheme](#)
- [One Nation One Fertilizer \(ONOF\)](#)
- [Direct Benefit Transfer \(DBT\)](#)
- [Nutrient Based Subsidy \(NBS\)](#)
- [Neem Coated Urea \(NCU\)](#)

What are the Challenges with Fertilizer Usage in India?

- **Imbalance in Fertilizer Use:** India's actual NPK ratio (**9.8:3.7:1 in Kharif 2024**) deviates significantly from the recommended **4:2:1 ratio**, leading to **nutrient deficiencies and soil degradation**.
 - This imbalance, with excessive nitrogen and insufficient phosphorus and potassium, leads to nutrient deficiencies, soil degradation, and reduced crop yields.
- **Excessive Use of Nitrogenous Fertilizers:** India is the **second-largest consumer** of urea in the world after China, but its overuse causes soil degradation, water pollution, and **greenhouse gas** emissions. Subsidies distort the fertilizer market and promote inefficiency.
- **Low Production and High Consumption:** Despite a slight increase in production in fertilizers from **385.39 LMT in 2014-15 to 503.35 LMT in 2023-24**, domestic fertilizer production **remains inadequate to fully meet the country's demand**.
 - In 2020-21, the total consumption of fertilizers was about **629.83 LMT**.
- **Dependence on Imports:** India imports around 20% of its urea, 50-60% of diammonium phosphate (DAP), and 100% of muriate of potash (MOP) fertilisers from nations such as **China, Russia, Saudi Arabia, UAE, Oman, Iran, and Egypt**.
 - This makes India **highly dependent on global supply chains** for key fertilizer nutrients and **exposed to global price fluctuations** and supply volatility.

Way Forward

- **Balanced Fertilizer Usage:** Promoting balanced fertilizer usage, with an emphasis on **NPKS** (nitrogen, phosphorus, potassium, and sulfur), can help address the **imbalance in the NPK ratio**, enhance soil health, and **decrease dependency** on nitrogen-dominant fertilizers such as urea.
- **Promotion of Organic and Bio-fertilizers:** Incentivizing **organic farming** and **bio-fertilizers** can reduce chemical fertilizer dependence, **enhance soil fertility, and minimize the environmental impact** of synthetic fertilizers.
- **Efficient Fertilizer Distribution:** Streamlining **fertilizer subsidies and distribution** through a **targeted approach** will **reduce inefficiencies and promote balanced, cost-effective** fertilizer use.
- **Domestic Production Capacity Expansion:** **Expanding domestic production** of phosphatic and potassic fertilizers, with **investments in technology and infrastructure**, will reduce India's dependence on imports and strengthen supply chain resilience.
- **Sustainable Fertilizer Policies:** The government should design policies that **encourage the judicious use of fertilizers**, taking into account regional soil types and crop-specific nutrient needs.



Drishiti Mains Question:

Discuss the challenges of fertilizer usage in India and suggest measures to promote balanced usage and enhance domestic production.

UPSC Civil Services Examination, Previous Year's Question (PYQs)

Q. With reference to chemical fertilizers in India, consider the following statements: (2020)

1. At present, the retail price of chemical fertilizers is market-driven and not administered by the Government.
2. Ammonia, which is an input of urea, is produced from natural gas.
3. Sulphur, which is a raw material for phosphoric acid fertilizer, is a by-product of oil refineries.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 and 3 only
- (c) 2 only
- (d) 1, 2 and 3

Ans: (b)

Q. Why does the Government of India promote the use of 'Neem-coated Urea' in agriculture? (2016)

- (a) Release of Neem oil in the soil increases nitrogen fixation by the soil microorganisms.
- (b) Neem coating slows down the rate of dissolution of urea in the soil.
- (c) Nitrous oxide, which is a greenhouse gas, is not at all released into atmosphere by crop fields.

(d) It is a combination of a weedicide and a fertilizer for particular crops.

Ans: (b)

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