

Balanced Fertilization

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Why in News?

The fiscal ended March 2024 saw urea consumption hit a record 35.8 million tonnes (mt), 16.9% higher than the 30.6 mt in 2013-14. Hence, it is expected that balanced fertilisation is likely to be a key policy goal for the government taking over after the **Lok Sabha** elections.

What is Balanced Fertilization?

- Balanced fertilisation discourages farmers from applying too much urea, di-ammonium phosphate (DAP) or muriate of potash (MOP), which only have primary nutrients in high concentrations.
- It means supplying these primary (N, phosphorus-P and potassium-K), secondary (sulphur-S, calcium, magnesium) and micro (iron, zinc, copper, manganese, boron, molybdenum) nutrients in the right proportion, based on soil type and the crop's own requirement at different growth stages.

Fertiliser Consumption in India

- Urea consumption hit a record in Financial Year 2023-24
 - The fiscal ended March 2024 saw urea consumption hit a record 35.8 million tonnes (mt), 16.9% higher than the 30.6 mt in 2013-14.
- **Impact of neem-coated urea on the consumption**
 - The consumption of urea, containing 46% nitrogen (N), actually fell during 2016-17 and 2017-18.
 - This was attributed to the mandatory coating of all urea with neem oil from May 2015.
 - Neem coating was intended to check illegal diversion of the highly-subsidised urea for non-agricultural uses, including by plywood, dye, cattle feed and synthetic milk makers.
 - Neem oil supposedly also acted as a mild nitrification inhibitor, allowing more gradual release of nitrogen.
 - Improved nitrogen use efficiency, in turn, brought down the number of urea bags required per acre.
- **Consumption of urea has only gone up during the last six years**
 - Despite compulsory neem-coating, and the government reducing the bag size from 50 to 45 kg in March 2018, the consumption of urea has only gone up during the last six years.

All-India Consumption of Fertiliser Products (*in lakh tonnes*)

	Urea	DAP	MOP*	NPKS	SSP
2013-14	306.00	73.57	22.80	72.64	38.79
2014-15	306.10	76.26	28.53	82.78	39.89
2015-16	306.35	91.07	24.67	88.21	42.53
2016-17	296.14	89.64	28.63	84.14	37.57
2017-18	298.94	92.94	31.58	85.96	34.39
2018-19	314.18	92.11	29.57	90.28	35.79
2019-20	336.95	101.00	27.87	98.57	44.03
2020-21	350.43	119.11	34.25	118.11	44.89
2021-22	341.80	92.72	24.56	114.79	56.81
2022-23	357.25	104.18	16.32	100.74	50.17
2023-24	357.80	108.12	16.45	110.73	45.44

What is Nutrient-based subsidy?

• About

- The **nutrient-based subsidy** (NBS) system, instituted in April 2010, was expected to promote balanced fertilisation.
- Under it, the government fixed a per-kg subsidy for N, P, K and S.
- The subsidy on any fertiliser was, thereby, linked to its nutrient content.

• Underlying idea behind the introduction of NBS

- The underlying idea was to induce product innovation.
- Also, the idea was to wean away farmers from urea, DAP (18% N and 46% P content) and MOP (60% K), in favour of complex fertilisers containing N, P, K, S and other nutrients in balanced proportions with lower concentrations.

• Performance of NBS

- NBS achieved its objective initially. Between 2009-10 and 2011-12, DAP and MOP consumption declined, while that of NPKS complexes and single super phosphate (SSP: 16% P and 11% S) rose.
- But NBS failed simply because it excluded urea.
 - With its maximum retail price (MRP) being controlled, and cumulatively raised by just 16.5 per cent – from Rs 4,830 to Rs 5,628 per tonne – post the introduction of NBS, consumption of urea

increased.

Challenges in promoting Balance Fertilization

• Restoration of controls

- The last couple of years have seen even non-urea fertilisers being brought under price control, first informally and formally since January 2024.
- The MRPs of these fertilisers were earlier set by the companies selling them, with the govt merely paying a fixed per-tonne subsidy linked to their nutrient content.
- As per the experts, the restoration of controls has worsened the nutrient imbalances.
 - The current MRP of DAP, at Rs 1,350 per 50-kg bag, is below the Rs 1,470 for the 10:26:26:0 and 12:32:16:0 NPKS complex fertilisers, notwithstanding their containing less N and P.
 - Even 20:20:0:13, which accounted for nearly 5.4 mt out of the total 11.1 mt of NPKS complexes consumed in 2023-24, is retailing at Rs 1,200-1,225 per bag, only marginally lower than DAP.
 - DAP has, thus, become the new urea, with farmers inclined to over-apply both.

• Most widely consumed complex fertilizer contains no K (Potassium)

- For MOP, MRP of Rs 1,650 per bag now incentivises neither farmers to apply directly nor companies to incorporate it into complexes.
- The most widely consumed complex fertiliser, 20:20:0:13, contains no K.
- That isn't good, considering that potassium boosts the immunity of crops against pests and diseases as well as uptake of nitrogen.

• Proper price hierarchy among non-urea fertilisers

- An immediate challenge is to ensure proper price hierarchy among non-urea fertilisers.
- That would mean pricing DAP the highest, MOP the lowest and complexes in between.
- DAP use should be restricted mainly to rice and wheat. Other crops can meet their P requirement through complexes and SSP.

Opportunity

• Import-dependent in fertilisers

- India is heavily import-dependent in fertilisers, be it of finished products or intermediates and raw materials.
- High global prices add to the country's foreign exchange outgo and also the government's subsidy burden.

• Cooling of international prices

- Landed prices of imported urea and other fertilisers have dropped significantly.
 - The price dips would have been more but for the Houthi rebel attacks in the Red Sea, disrupting vessel movements from the Mediterranean through the Suez Canal.
 - Ships carrying DAP and rock phosphate from Morocco's Jorf Lasfar port, which reached India in 24-26 days, are taking 40 days at present.
- The cooling of international prices, nevertheless, gives some flexibility for the govt to rationalise MRPs of fertilisers and promote balanced plant nutrition.

Conclusion

The Centre, in January, approved the launch of **sulphur-coated urea**, containing 37% N and 17% S. Its MRP has been fixed at Rs 266.50 per bag, the same as for regular neem-coated urea. But in this case, the bag will have only 40 kg, as against 45 kg for the latter – in effect, translating into a 12.5% price hike.

One can expect many more such “balanced fertilisation” moves in the months ahead.

Q.1. What is fertiliser?

Fertilizer is a substance that provides nutrients to plants to help them grow and thrive. It can be natural or synthetic, organic or inorganic, and can be applied to soil or plant tissues.

Q.2. What is di-ammonium phosphate (DAP)?

Di-ammonium phosphate (DAP) is a water-soluble fertilizer that contains nitrogen and phosphorus, which are essential nutrients for plants. It's made by reacting ammonia with phosphoric acid and is the most widely used phosphorus fertilizer in the world.

Source: [How the next government will push 'balanced fertilisation'](#)

Source: <https://vajiramandravi.com/current-affairs/balanced-fertilization/>

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