Over-application of Urea and DAP

Why in news?

India's fertiliser sector which has been riddled with distortions from excessive use of urea is seeing a similar phenomenon of over-application of Di-ammonium phosphate (DAP) due to underpricing.

What are the major reasons behind over usage?

> *The ideal Nitrogen, Phosphorus, Potassium (NPK) use ratio is **4:2:1**.*

- **High fertilizer subsidy** - High government subsidies are behind the low pricing, and high sales, of these two fertilisers.
- Under the Nutrient based subsidy scheme, a fixed amount of subsidy, decided on an annual basis, is provided on each grade of subsidised phosphatic and potassic (P&K) fertilisers, **except for urea**, based on the nutrient content present in them.
- **Cooling of global fertilizer prices** - The easing of global fertilizer prices significantly improved overall availability of the fertilizers, except Muriate of Potash (MOP), during the ongoing rabi cropping season.
- India is the top country by diammonium phosphate import in the world.

What efforts were taken to optimize the fertilizer usage in India?

> *Urea has 46% nitrogen (N), while DAP contains 46% phosphorus (P) plus 18% N and MOP has 60% potassium (K).*

- **NBS scheme** - The nutrient-based subsidy (NBS) scheme was launched in 2010 to discourage farmers from applying too much urea, DAP and MOP.
- By moving away from product-specific subsidy, to one where the government fixed a per-kg NBS rate for each nutrient (N, P, K and sulphur or S), it was expected to promote balanced fertilisation.
- It also meant more use of complex fertilisers and single super phosphate (SSP, which contains 16% P and 11% S).
- **Neem coating of urea** - The government made coating of urea with neem oil compulsory from 2015-16, to check illegal diversion of the heavily-subsidised fertiliser for non-agricultural uses.
- Neem oil acted as a mild nitrification inhibitor, allowing a gradual release of nitrogen thus promoting nitrogen use efficiency.

What is the concern now?

- The current fiscal has witnessed a worsening of nutrition imbalances.
- Consumption of both urea and DAP has shot up while the sales of complexes (SSP and MOP) have reduced.
- The problem is attributed the imbalances to "**disturbances in the price hierarchy**".
- Among the non-urea fertilisers, the maximum retail price (MRP) was normally the highest for DAP and lowest for MOP.
- But it's the other way round now, prompting the farmers to use more DAP.

What is the road ahead?

- **Restriction of DAP** - The DAP use must be restricted to rice and wheat.
- All other crops can meet their Phosphorus requirement through SSP and complexes.
- **Promotion of SSP** - The SSP's acceptance can be raised by permitting sale only in granular and not in powdered form as SSP powder is prone to adulteration with gypsum or clay.
- Farmers can be assured of quality through granules, which will also promote slower release of P without drift during application.

Quick Facts

Urea

- Urea is a source of nitrogen, an essential nutrient crucial for crop growth and development.
- Urea is the most important nitrogenous fertilizer in the country because of its high N content (46%N).
- It is a white crystalline organic chemical compound with neutral pH.
- Urea is widely used in the agricultural sector both as a fertilizer and animal feed additive.

Di-ammonium phosphate (DAP)

- DAP is a water-soluble ammonium phosphate salt which is produced by the reaction of ammonia with phosphoric acid under controlled conditions.
- DAP is the 2nd most commonly used fertiliser in India after urea and farmers normally apply this fertiliser just before or at the beginning of sowing.
- It is a basic nutrient for Rabi crops like mustard and wheat.
- Fertilizer grade DAP contains 18% Nitrogen and 46% Phosphorus (P2O5).
- Though there are other phosphatic fertiliser such as Single Super Phosphate (SSP), DAP is the preferred source since it contains nitrogen as well.

References

1. The Indian Express | Over-application of urea and DAP
2. The Indian Express | High use of subsidised fertilisers

