

Reforming the fertilizer sector

In order to address the multiple goals of fertilizer policy, India needs to work on four key areas:

The Hindu

Syllabus : **GS 3-** *Issues related to Direct and Indirect Farm Subsidies; **GS 2-** *Government Policies and Interventions for Development in various sectors and Issues arising out of their Design and Implementation.**

Since 1991, when economic reforms began in India, several attempts have been made to reform the fertilizer sector to keep a check on the rising fertilizer subsidy bill, promote the efficient use of fertilizers, achieve balanced use of N, P and K (nitrogen, phosphorus and potassium), and reduce water and air pollution caused by fertilizers like urea.

What are problem associated with fertilizer sector in India?

- In the last 20 years, the price of urea has increased to ₹5.36 per kg in 2021 from ₹4.60 in 2001. In the same period, the Minimum Support Price of paddy increased by 280% and that of wheat by 230%.
- At current prices, farmers pay about ₹268 per bag of urea and the Government of India pays an average subsidy of about ₹930 per bag. Thus, taxpayers bear 78% of the cost of urea and farmers pay only 22%. This is expected to increase and is not sustainable.
- Fertilizer subsidy has doubled in a short period of three years. For 2021- 22, the Union Budget has estimated fertilizer subsidy at ₹79,530 crore (from ₹66,468 crore in 2017-18) but it is likely to reach a much higher level due to the recent upsurge in the prices of energy, the international prices of urea and other fertilizers, and India's dependence on imports.
- The government introduced the **Nutrient Based Subsidy (NBS) in 2010** to address the growing imbalance in fertilizer use in many States, which is skewed towards urea (N). However, only non-nitrogenous fertilizers (P and K) moved to NBS; urea was left out.
- The international prices of fertilizers are volatile and almost directly proportional to energy prices. Besides, cartels of major global producers have a strong influence on prices.
- The **total demand for urea in the country is about 34-35 million tonnes (mln t)** whereas the domestic production is about 25 mln t. This leaves the gap of nearly 9-10 mln t for urea. Still huge amount of urea government have to import.

The way forward:

In order to address the multiple goals of fertilizer policy, we need to simultaneously work on four key policy areas:

- We need to be self-reliant and not depend on import of fertilizers. In this way, we can escape the vagaries of high volatility in international prices. In this direction, **five urea plants at Gorakhpur, Sindri, Barauni, Talcher and Ramagundam are being revived in the public sector.**
- We need to extend **the NBS model to urea** and allow for price rationalisation of urea compared to non-nitrogenous fertilizers and prices of crops. The present system of keeping the price of urea fixed and absorbing all the price increases in subsidy needs to be replaced by distribution of price change over both price as well as subsidy based on some rational formula.

- **Develop alternative sources of nutrition for plants.** Discussions with farmers and consumers reveal a strong desire to shift towards the use of **non-chemical fertilizers** as well as a demand for **bringing parity in prices and subsidy given to chemical fertilizers with organic and biofertilizers**. This also provides the scope to use a large biomass of crop that goes waste and enhance the value of livestock by-products. We need to scale up and improve innovations to develop alternative fertilizers. Though compost contains low amounts of nitrogen, technologies are now available to enrich this.
- India should pay attention to **improving fertilizer efficiency** through need-based use rather than broadcasting fertilizer in the field. The recently developed **Nano urea by IFFCO shows promising results in reducing the usage of urea**. Such products need to be promoted expeditiously after testing.

Conclusion:

- These changes will go a long way in enhancing the productivity of agriculture, mitigating climate change, providing an alternative to chemical fertilizers and balancing the fiscal impact of fertilizer subsidy on the Union Budgets in the years to come.

Nano Urea (Liquid) fertiliser

- By IFFCO
- nanotechnology based fertiliser to address the imbalanced and excessive use of conventional Urea.
- Nano Urea (Liquid) is a source of nitrogen which is a major essential nutrient required for proper growth and development of a plant.
- Nitrogen is a key constituent of amino acids, enzymes, genetic materials, photosynthetic pigments and energy transfer compounds in a plant.
- Typically, nitrogen content in a healthy plant is in the range of 1.5 to 4%. Foliar application of Nano Urea (Liquid) at critical crop growth stages of a plant effectively fulfils its nitrogen requirement and leads to higher crop productivity and quality in comparison to conventional urea.

About biofertilizers:

In nature, there are a number of useful soil microorganisms which can help plants to absorb nutrients. Their utility can be enhanced with human intervention by selecting efficient organisms, culturing them and adding them to soils directly or through seeds. The cultured microorganisms packed in some carrier material for easy application in the field are called bio-fertilisers. Thus, **the critical input in Bio fertilisers is the microorganisms**.

Benefits of bio fertilizers:

- Bio-fertilisers are living microorganisms of bacterial, fungal and algal origin. Their mode of action differs and can be applied alone or in combination.
- Bio fertilizers fix **atmospheric nitrogen** in the soil and root nodules of legume crops and make it available to the plant.
- They **solubilise the insoluble forms of phosphates** like tricalcium, iron and aluminium phosphates into available forms.
- They **scavenge phosphate** from soil layers.
- They **produce hormones and anti-metabolites** which promote root growth.
- They **decompose organic matter** and help in mineralization in soil.
- When applied to seed or soil, **bio fertilizers increase the availability of nutrients and improve the yield by 10 to 25% without adversely affecting the soil and environment**.

Types and features of bio fertilizers:

Based on type of microorganism, the bio-fertilizer can also be classified as follows:

- **Bacterial Biofertilizers:** e.g. Rhizobium, Azospirillum, Azotobacter, Phosphobacteria.
- **Fungal Biofertilizers:** e.g. Mycorrhiza
- **Algal Biofertilizers:** e.g. Blue Green Algae (BGA) and Azolla.
- **Actinimycetes Biofertilizer:** e.g. Frankia.

Bio-fertilizer are mostly cultured and multiplied in the laboratory. However, **blue green algae and azolla** mass-multiplied in the field.

The Government is promoting organic fertilizers by providing **financial assistance** under the following schemes:-

- **Paramparagat Krishi Vikas Yojana (PKVY)** financial assistance is provided for promotion of Organic farming through adoption of organic village by cluster approach and PGS certification. Assistance of Rs 50,000 per hectare/ 3 years is given, out of which Rs. 31,000 (62%) is provided to the farmers directly through DBT, for inputs (bio-fertilizers, biopesticides, vermicompost, botanical extracts etc) production/ procurement, post harvest management etc.
- **Mission Organic Value Chain Development for North Eastern Region (MOVCDNER):** Farmers are given assistance of Rs25000/ ha/ 3 years for both onfarm & off-farm organic inputs, and seeds/ planting material.
- **Mission for Integrated Development of Horticulture** financial assistance is provided for setting up vermicompost units @50% of the cost subject to a maximum of Rs.30,000/- per beneficiary.
- **National Mission on Oilseeds and Oil Palm (NMOOP):** Financial assistance@ 50% subsidy to the tune of Rs. 300/- per ha is being provided for different components including bio-fertilizers, supply of Rhizobium culture/Phosphate Solubilising Bacteria (PSB) / Zinc Solubilising Bacteria(ZSB) / Azotobacter/ Mycorrhiza and vermi compost.
- **National Food Security Mission (NFSM):** Under NFSM, financial assistance is provided for promotion of Bio-Fertilizer (Rhizobium/ PSB) @50% of the cost limited to Rs.300 per ha
- **National Project on Management of Soil Health and Fertility (NPMSHF)** under the **National Mission for Sustainable Agriculture**, there is provision for promotion of organic fertilizer up to Rs.500/- per hectare.
- Assistance is also available for organic fertilizers under **Rashtriya Krishi Vikas Yojana (RKVY).**



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