Nano Urea

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Why is in news? Dr Mansukh Mandaviya inaugurates IFFCO Nano Urea Liquid Plants at Aonla and Phulpur in UP

The Union Minister of Chemicals and Fertilizers, inaugurated the IFFCO Nano Urea Liquid Plants at Aonla and Phulpur in Uttar Pradesh.

Addressing the event, the Minister stated that today is an important day because Nano urea plants have been dedicated to the nation. He said that Nano Urea, in the coming times will ensure the progress of the farmers, increase their income. In this way it will change the future of our farmer.

Nano urea is a **liquid fertilizer developed by IFFCO**. It is an alternative to conventional urea. It is essentially **urea in** the **form of a nanoparticle**.

Urea is a chemical nitrogen fertilizer, white in colour, which artificially provides nitrogen, a major nutrient required by plants.

It aims to **reduce farmers' dependence on packaged urea**.

The usual practice for **recommending or rejecting a new fertilizer** for commercial use required **three seasons of independent assessment by the Indian Council of Agricultural Research** (ICAR), but in the case of nano urea this was reduced to two.

By FY25, around 440 million bottles of 500 ml nano urea will be produced. This will be equivalent to around 20 million tonnes of urea. It will take care of the 9 million tonnes that India imports annually.

The country's **domestic urea production** is around **26 million tonnes**, while **demand is around 35 million tonnes.** And, the gap is met through imports.

The government will save foreign exchange of Rs 40,000 crore approximately per annum after replacing the conventional urea with the Nano Urea.

The import of urea **may not be required after 2023-24**.

Benefits:

It has a **shelf life of a year** and farmers need not be worried about "caking" when it comes in contact with moisture.

Its price comes in a half-litre bottle priced at Rs 240, and carries no burden of subsidy currently. By contrast, a farmer pays around Rs 300 for a 50-kg bag of heavily subsidised urea.

The conventional urea has an efficiency of about 25 percent; the efficiency of liquid nano urea can be as high as 85-90 per cent.

Liquid nano urea is sprayed directly on the leaves and gets absorbed by the plant.

Fertilisers in nano form provide a **targeted supply of nutrients to crops**, as they are absorbed by the stomata, pores found on the epidermis of leaves.

It will **reduce the country's subsidy bill** and it is aimed at reducing the unbalanced and indiscriminate use of conventional urea.

Properties	Nano fertilizers	Conventional fertilizers
Solubility and dispersion of mineral micronutrients	Improve solubility and dispersion of insoluble nutrients in soil, reduce soil absorption and fixation and increase the bioavailability	Less bioavailability to plants due to large particle size and less solubility
Nutrient uptake efficiency	Might increase fertilizer efficiency and uptake ratio of the soil nutrients in crop production and save fertilizer resource	Bulk composite is not available for roots and decrease efficiency
Controlled-release modes	Release rate and release pattern of nutrients for water-soluble fertilizers might be precisely controlled through encapsulation in envelope forms	Excess release of fertilizers may produce toxicity and destroy ecological balance of soil
Effective duration of nutrient release	Nanofertilizers can extend effective duration of nutrient supply of fertilizers into soil	Used by the plants at the time of delivery, the rest is converted into insoluble salts in the soil
Loss rate of fertilizer nutrients	Reduce loss rate of fertilizer nutrients into soil by leaching and/or leaking.	High loss rate by leaching, rain off and drift.