

# NANO UREA: ENVIRONMENT FRIENDLY AND BETTER SUBSTITUTE FOR UREA

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## INTRODUCTION

Through a proprietary patented technology, IFFCO - Nano Biotechnology Research Centre (NBRC) Kalol, Gujarat developed Nano Urea (Liquid) fertilizer for the first time in the world. This nanofertilizer contains nitrogen, which is a major essential nutrient required for proper plant growth and development. In comparison to conventional urea, 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.

## REASON FOR CREATING NANO UREA:

Our country lacks fertilizer raw materials. The oil and gas required to produce them are scarce and unsustainable resources. IFFCO is committed to developing long-term, innovative solutions to minimize agricultural input costs and boost farmer income. It was for this reason that the world's first micro urea liquid was created.

**Urea**, a form of fertilizer is used as a source of nitrogen for plant growth and development.

In plants, nitrogen is essential for amino acids, enzymes, DNA and RNA, and chlorophyll. The nitrogen level of a healthy plant typically ranges from 1.5 to 4 per cent. Because nano nitrogen particles are disseminated in liquid form in nano urea, when sprayed on crop leaves, they begin operating almost immediately to supply the crop's nutritional needs while also triggering pathways for uptake and assimilation of nitrogen.

## ABOUT NANO UREA:

Nano Urea (Liquid) includes nanoscale nitrogen particles with 10,000 times the surface area and number of particles of 1 mm Urea prills (55,000 nitrogen particles over 1 mm Urea prill). As a result, it has a greater impact. Nano Urea has an uptake efficiency of more than 80% when compared to Urea. As a result, it is used in smaller amounts than traditional urea fertilizers to meet the nitrogen needs of plants. On 43 crops, effectiveness studies were undertaken across India at 20 ICAR research institutes and State Agricultural Universities. 11,000 farmer field trials on 90 crops were conducted across India under the supervision of Krishi Vigyan Kendras. Nano Urea (liquid) has been shown in studies to boost crop productivity while also reducing the need for conventional Urea by 50%. Nano urea (liquid) application also boosts yield, biomass, soil health, and nutritional quality of the crop.

#IFFCONanoUrea

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### IFFCO NANO UREA LIQUID

Introducing World's First Nano Urea  
for Farmers

- Reduces Input Cost
- Increases Farmers' Income
- Environment-friendly
- Enhances Crop Productivity
- Improves Nutritional Value
- Cheaper than Conventional Urea

Following are the main characteristics of the IFFCO Nano Urea:

Characteristic	Nano Urea	Conventional Urea
Invention	2021	1823
Technology	Nano- technology	Conventional method
Particle size	32 nm	1 mm
Use efficiency	85-90 %	30-40 %
Price	240/-	266.50/-
Storage	Very less area	Very high area
Pollution	No	Air, Water and Soil
Vaporization	No	Yes
Soil residual	No	Yes
Effect on soil	Enhance Quality	Acidifies soil
Availability in plant	Throughout the life cycle	3-4 days
Effect on crop maturity	Maturity on time	Early maturity
Intake medium	Direct through leaves	Through roots
Method of use	Spray	Top dressing

## HOW IT WORKS:

Instead of dumping granular urea into the soil, nano urea in liquid form can be sprayed directly on the leaves during two important growth stages of a crop. A 45kg bag of urea can be replaced with a 500ml vial of nano urea. Nano Urea is quickly absorbed by plant cells after being sprayed on leaves. It penetrates through stomata and other holes. It is easily transferred throughout the plant via phloem from the source to the sink as needed. Unused nitrogen is retained in the plant vacuole and released slowly for appropriate plant growth and development. Rather of popping a capsule, nano urea is administered intravenously. The ultra-small particles are absorbed more efficiently from the leaf than from the soil. More than 70% of conventional urea given to the soil is wasted because it is not absorbed by the plants. It causes the soil to become acidic, and the run-off pollutes water bodies.



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# Introducing IFFCO NANO UREA LIQUID

World's first Nano Urea for Farmers

## THE ADVANTAGES OF IFFCO NANO UREA (LIQUID) ARE NUMEROUS:

- Reduces the amounts of traditional urea needed by half or more.
- Produces more with fewer resources: One bottle of Nano Urea (500 mL) has the same efficacy as one bag of urea.
- Environmentally friendly product that can improve soil, air, and water quality, so assisting in addressing global warming issues and reaching UN SDGs.
- It's less costly than traditional urea.
- Farmers' input costs are reduced, resulting in increased income.
- Increases crop output, soil health, and produce nutritional quality.