



Government Highlights Significant Progress in Nano-Fertilizer Adoption and Drone-Led Agricultural Transformation

New Government Studies with NPC & ICAR to Assess Urea Replacement and Improve Nitrogen Use Efficiency

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The Union Ministry of Chemicals and Fertilizers has reported a substantial surge in the adoption of nano-fertilizers, with cumulative sales reaching 1,593.37 lakh bottles of 500ml each since their inception. This total includes 1,219.27 lakh bottles of Nano Urea and 374.10 lakh bottles of Nano DAP.

Field trials conducted by institutions under the Indian Council of Agricultural Research (ICAR) and State Agricultural Universities (SAUs) have demonstrated the effectiveness of nano fertilizers. Studies indicate that the application of Nano Urea as a foliar spray, along with the recommended basal dose of conventional fertilizers, can achieve comparable yields while reducing urea consumption by **25–50 per cent**, with yield gains ranging from **3 to 8 per cent** in various crops. Similarly, trials on Nano DAP have shown that **partial substitution of phosphorus fertilizers (up to 50 per cent)**, combined with appropriate application methods, can result in comparable crop yields in certain cases, such as potato cultivation.

To ensure the long-term effectiveness of these inputs, the Government has initiated several research projects, including a Phase-II study with the National Productivity Council signed on November 14, 2025, to evaluate the extent of replacement of conventional urea. Additionally, a five-year network project was launched with ICAR on November 3, 2025, to evaluate nitrogen use efficiency across diverse agro-ecological zones. While studies have shown comparable productivity with partial substitution, the Government is addressing concerns regarding inconsistent performance and nutrient deficiencies observed at higher substitution levels, such as 50%, particularly in low-fertility soils. Corrective measures include standardizing application protocols and promoting balanced fertilizer use through extensive awareness programs and demonstrations.

The Government has taken several corrective measures, including undertaking long-term, multi-locational research through the Indian Council of Agricultural Research (ICAR) to evaluate crop response, nutrient use efficiency, and soil impacts; standardizing application protocols; and promoting balanced fertilizer use through farmer awareness programmes, demonstrations, and training. Further, efforts are being made to improve access to appropriate application technologies such as foliar spray systems, including drone-based spraying, to ensure proper and efficient use of nano fertilizers in the country. In order to promote the use of Nano Fertilizers among farmers across the country including Maharashtra, Madhya Pradesh and UT of Dadra and Nagar Haveli and Daman and Diu, the following measures have been undertaken:

- i. Use of Nano Fertilizers is promoted through different activities such as awareness camps, webinars, field demonstrations, Kisan Sammelans and films in regional languages etc.
- ii. Nano Fertilizers are made available at Pradhan Mantri Kisan Samridhi Kendras (PMKSKs) by concerned companies.
- iii. Nano Fertilizers has been included under monthly supply plan issued by Department of Fertilizers regularly.
- iv. For ease in application and utilization of Nano fertilizers like Nano Urea through foliar application, initiatives such as innovative spraying options like 'Kisan Drones' and distribution of battery operated Sprayers at retail points are undertaken. For this purpose, pilot training and custom hiring spraying services through Village Level Entrepreneurs are actively promoted.
- v. DoF in collaboration with fertilizer companies has initiated a Maha Abhiyan for adoption of Nano DAP in all 15 agro-climatic zones of the country through consultations and field level demonstrations. Further, DoF in collaboration with fertilizer companies has also launched campaign for field level demonstrations and awareness programs of Nano Urea plus in 100 districts of the country.

The Government is enhancing access to application technology for nano fertilizers through the **Namo Drone Didi (NDD) Scheme**, with an outlay of ₹1,261 crore for the period 2023-24 to 2025-26. Under the scheme, the Department of Fertilizers, through fertilizer companies, has facilitated the distribution of **1,094 drones** to Women Self Help Groups (SHGs), including beneficiaries in Maharashtra and Madhya Pradesh. Out of these, **500 drones** have been provided specifically under the NDD scheme. No drones have been allocated to the Union Territory of Dadra and Nagar Haveli and Daman and Diu. All beneficiaries have received training at DGCA-authorized Remote Pilot Training Organisations (RPTOs), covering both drone operation and field applications such as spraying of liquid fertilizers and pesticides.

To further promote the use of drones in agriculture, ₹**52.50 crore** has been provided to ICAR under the Sub-Mission on Agricultural Mechanization (SMAM). During 2022-23 to 2025-26 (as on 15 March 2026), ICAR institutions, Krishi Vigyan Kendras (KVKs), and State Agricultural Universities have procured **297 drones** and conducted **36,882 demonstrations**, covering **38,280 hectares** and benefiting over 426,579 **lakh farmers**. No demonstrations have been conducted in the Union Territory of Dadra and Nagar Haveli and Daman and Diu.

This information was provided by Smt. Anupriya Patel, Minister of State in the Ministry of Chemicals and Fertilizers, in a written reply to a question in the Lok Sabha.

Neeraj Kumar Bhatt/Shatrughna Prasad/Amit

cmc.fertilizers[at]gmail[dot]com

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