

GOVERNMENT OF INDIA
MINISTRY OF CHEMICALS AND FERTILIZERS
DEPARTMENT OF FERTILIZERS

RAJYA SABHA

UNSTARRED QUESTION NO. 1783 TO BE ANSWERED ON: 05.08.2025

Assessment and monitoring of nano-fertilisers' efficacy

1783. Dr. MEDHA VISHRAM KULKARNI:

Will the **Minister of CHEMICALS AND FERTILIZERS** be pleased to state:

- (a) whether the sale of nano-fertilisers, including nano urea and nano DAP has significantly increased in recent years;
- (b) whether field trials or studies have validated their efficacy in improving crop yields and reducing conventional fertiliser usage;
- (c) whether concerns have been raised regarding inconsistent performance and nutrient deficiency; and
- (d) if so, the corrective steps taken, including audits, farmer awareness and access to application technology?

ANSWER

THE MINISTER OF STATE IN THE MINISTRY OF CHEMICALS AND FERTILIZERS
(SMT. ANUPRIYA PATEL)

- (a) The sales of Nano Urea and Nano DAP in Lakh Bottles (500ml equivalent) during 2021-22 to 2025-26 (as on June 2025) are as below:

Product	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26 (From 1 st April 2025 to 30 th June 2025)	Total
Nano Urea	215.2	326.8	207.43	273.55	44.55	1067.53
Nano DAP	-	-	58	160.24	56.48	274.72

(b) and (c) Yes, Sir. Indian Council of Agriculture Research (ICAR) research institutes/state agricultural Universities carried out nano urea trials on different crops such as Paddy, Wheat, Mustard, Maize, Tomato, Cabbage, Cucumber, Capsicum and Onion in different agro-climatic zones. The study on the effect of nano urea (liquid) on crop yield and soil indicated that nano-urea can be used as foliar spray for top-dressing instead of normal urea. In an another independent study carried out by the ICAR institute on selected

crops revealed that Nano urea spray along with recommended practice enhanced 0.8% growth (height, tillers), 1% in physiological traits (chlorophyll, enzyme), 2% yield attributes over 100% RDN in rice. It also significantly decreased the cyanogen (bitterness compound) in cassava and enhanced protein content (1-2%) and reduced fiber fractions in fodder maize.

The study also showed that application of nano urea (02 sprays) with 100% RDF (Recommended Dose of Fertilizer) in rajma has no adverse impact on soil nutrients content. There is no significant change in the soil mineral N concentration for 75 % RDF + 1 NU spray for wheat.

Furthermore, National Productivity Council (NPC) of India has been assigned to undertake the study of Nano Urea on "Evaluating Efficacy, Utility and Impact of Nano Urea in comparison to Conventional Urea for the year 2024-26. Study conducted in 8 States (AP, Assam, Gujrat, Bihar, Karnataka, MP, Maharashtra, UP), 24 districts and 120 villages from key stakeholders viz. farmers, retailers, SAU/KVK and submitted their draft findings, which is as under:

- (i) Improved Nano Urea plus with 16% Nitrogen (w/w) or 20% Nitrogen (w/v) which covers large number of crops is better for higher yield.
 - (ii) Percentage increase in yield for combined application of conventional urea (basal dose) and nano urea (foliar application) as compared to conventional urea alone is 1.65-14.82% depending upon the crop based on feedback from farmers.
 - (iii) The crop growth is better if seed treatment is done with Nano DAP.
 - (iv) Conventional urea harms the population of earthworms which are beneficial for the health of soil and the crops. Hence conventional urea may be used to a minimum extent and the use of nano urea has to be promoted for better soil and crop health.
 - (v) Nano urea does not degrade soil health as it is applied as a foliar application.
- (d) In order to promote the use of Nano Fertilizers amongst the farmers, the following steps have been taken:
- i. Use of Nano Fertilizers are promoted through different activities such as awareness camps, webinars, nukkad nataks, 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. ICAR through Indian Institute of Soil Science, Bhopal recently organized National Campaign on "Efficient and Balanced Use of Fertilizer (including Nano-fertilizers)".

- v. 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.
- vi. 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.
