GOVERNMENT OF INDIA
MINISTRY OF CHEMICALS AND FERTILIZERS
DEPARTMENT OF FERTILIZERS

LOK SABHA

UNSTARRED QUESTION **NO. 4614** TO BE ANSWERED ON: **20.03.2026**

Reduction in Consumption of Conventional Fertilizers

4614. Dr. Shivaji Bandappa Kalge:
Smt. Delkar Kalaben Mohanbhai:
Shri Gyaneshwar Patil:
Shri Bhumare Sandipanrao Asaram:
Shri Nilesh Dnyandev Lanke:

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

(a) whether there has been a significant increase in the sale of nano-fertilizers including Nano Urea and Nano DAP in the country in recent years, if so, the details thereof, year-wise;
(b) whether field trials/studies have confirmed their efficacy in improving crop yields and reducing the consumption of conventional fertilizers, if so, the details thereof;
(c) whether concerns have been expressed regarding the inconsistent performance of said efficacy and issues related to nutrient deficiency, if so, the details thereof; and
(d) the corrective steps taken by the Government including farmer awareness programmes and improving access to application technology in the country, State/district/UT-wise including Maharashtra, Madhya Pradesh and UT of Dadra and Nagar Haveli and Daman and Diu?

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

(a) The year wise sales of Nano fertilizers including Nano Urea and Nano DAP in the country since inception are as follows:

(In Lakh Bottles of 500ml each)

Year	Sales of Nano Urea	Sales of Nano DAP	Sales of Nano fertilizers
2021-22	212.13	-	212.13
2022-23	325.35	-	325.35
2023-24	206.97	57.81	264.78
2024-25	273.68	160.00	433.68
2025-26 (Till 28.02.2026)	201.14	156.29	357.43
Total	**1219.27**	**374.10**	**1593.37**

(b) and (c) Based on the bio- efficacy trials at multiple locations by ICAR institutions and State Agriculture Universities (SAUs) and bio-safety test results, Government of India had provisionally notified Nano Urea as Nano Nitrogen Fertilizers in Fertilizer Control Order (FCO), 1985. These experimental trials of Nano Urea were conducted on different crops such as paddy, wheat, mustard, maize, tomato, cabbage, cucumber, capsicum and onion in different agro-climatic zones. The study indicated that two spray of nano urea as top-dressing alongwith recommended basal dose of nitrogen gave comparable yield to that obtained with full recommended dose of nitrogen with yield advantage of 3-8% and urea saving of 25-50% in various crops. Similarly, the Government on the basis of positive result of crop trials conducted in SAUs / ICAR institutes has notified Nano DAP and Nano zinc under FCO. Studies conducted by ICAR institutes of Central Potato Research Institute of ICAR at Modipuram and Jalandhar confirmed 50% replacement of Phosphorus by 2 sprays @ 4 ml /litre of Nano DAP and tuber treatment @ 5 ml/litre resulted at par yield of potato.

To assess the efficacy of Nano fertilizers in improving crop yields and reducing the consumption of conventional fertilizers, the following studies have been undertaken :

(i) An MoU has been signed between National Productivity Council (NPC) of India and Department of Fertilizers on 5th March, 2024 to undertake the study of Nano Urea on "Evaluating Efficacy, Utility and Impact of Nano Urea in comparison to Conventional Urea". As per the NPC assessment based on the farmers feedback, Nano Urea must be used only as a foliar application, while the basal dose must continue to be supplied through Conventional Urea, which remains essential even when Nano Urea is used. Combined application, Conventional Urea as basal and Nano Urea as foliar, has shown 1.65% to 14.82% increase in crop yield, depending on the crop, based on farmer feedback.

(ii) A Phase-II study by NPC has also been signed on 14.11.2025 for evaluating the extent of replacement of Conventional Urea by Nano Urea.

(iii) An MoU has been signed with ICAR on 03.11.2025 for undertaking a Network Project on the evaluation of nano urea on crop productivity and nitrogen use efficiency in diverse Agro-Ecological zones of India, jointly funded by fertilizer PSUs/cooperatives for implementing across multiple collaborating agricultural institutions for a period of five years.

(iv) ICAR has initiated a project (2024–26) funded by the Indian Council for Fertilizers and Fertilizer Technology Research (ICFFTR), with a total outlay of ₹160 lakh, to evaluate the impact of Nano Fertilizers on crop growth, soil health, and nutrient uptake across various agro-ecological zones. This project, too, involves several collaborating agricultural institutions.

Concerns have been expressed regarding the inconsistent performance of nano fertilizers, including variability in efficacy across locations and crops, as well as issues related to nutrient sufficiency at higher replacement levels; field trials have shown that while partial substitution (around 25%) of conventional fertilizers may yield comparable or marginally

higher productivity in some cases, higher substitution levels (such as 50%) often resulted in yield reductions, decline in grain quality, and nutrient deficiencies, particularly in soils with low fertility, with performance also declining over repeated use at the same locations .

(d) 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 in the country through the Namo Drone Didi (NDD) scheme. The scheme aims to provide drones to the Women Self Help Groups (SHGs) with an outlay of Rs. 1261 Crores for the period from 2023-24 to 2025-26. Under the scheme, Department of Fertilizers, through Fertilizer companies, has ensured distribution of 1094 drones to Namo Drone Didis of SHGs. The State-wise distribution of 1094 drones including Maharashtra, Madhya Pradesh is attached at **Annexure A**. Out of these 1094 drones drone distributed to drone didis, 500 drones have been distributed under the Namo Drone Didi Scheme. There is no allocation of drones to the Union Territory of Dadra and Nagar Haveli and Daman and Diu. All these SHG members have been provided training at the Remote Pilot Organisations (RPTOs) authorised by DGCA. The training included both drone flying (pilot training) and actual operation in fields, such as spraying liquid fertilizers and pesticides.

In order to promote the use of drones in agriculture, the funds amounting to Rs. 52.50 Crores have been provided to the Indian Council of Agricultural Research (ICAR) under Sub-Mission on Agricultural Mechanization (SMAM) for taking up drone demonstrations on the farmers' fields through ICAR institutions, Krishi Vigyan Kendras (KVKs) and State Agricultural Universities. During the period from 2022-23 to 2025-26 (as on 15.03.2026), all these institutions have procured 297 drones. 36,882 drone demonstrations have been conducted on the farmers' fields in various States covering an area of 38,280 hectares. 426,579 farmers have participated in these demonstrations. The State-wise details including Maharashtra, Madhya Pradesh is placed at **Annexure-B.** There is no drone demonstrations on farmers' fields have been conducted in the Union Territory of Dadra and Nagar Haveli and Daman and Diu.

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Annexure A

Annexure referred to in reply to part (d) of Lok Sabha Unstarred Question No. 4614 for answering on 20.03.2026

State-wise distribution of 1094 drones

S.No	State Name	No. of Drones distributed
1.	Andhra Pradesh	108
2.	Assam	28
3.	Bihar	32
4.	Chhattisgarh	15
5.	Goa	1
6.	Gujarat	58
7.	Haryana	102
8.	Himachal Pradesh	4
9.	J&K	2
10.	Jharkhand	15
11.	Karnataka	145
12.	Kerala	51
13.	Madhya Pradesh	89
14.	Maharashtra	60
15.	Odisha	16
16.	Punjab	57
17.	Rajasthan	40
18	Tamil Nadu	44
19.	Telangana	81
20.	Uttar Pradesh	128
21.	Uttarakhand	3
22.	West Bengal	15
Total		**1094**

Annexure B

Annexure referred to in reply to part (d) of Lok Sabha Unstarred Question No. 4614 for answering on 20.03.2026

State-wise Details of Drones Procured by ICAR, Number of Demonstrations Conducted, Area Covered, and Farmers Participated

S. No	Name of State	No of Drones Procured	No of Demonstration	Area Covered	No. of Farmers participated
1.	Andhra Pradesh	8	2000	2644	10592
2.	Andaman and Nicobar Islands	2	5	85	820
3.	Arunachal Pradesh	2	47	95	1172
4.	Assam	12	826	761.61	34145
5.	Bihar	15	2582	1956.39	5471
6.	Chhattisgarh	6	1314	1584	16545
7.	Delhi	8	700	200	6000
8.	Goa	02	12	18.3	241
9.	Gujarat	11	2089	1873	12480
10.	Haryana	16	3300	2200	78000
11.	Himachal Pradesh	6	900	780	15000
12.	Jharkhand	8	938	516.27	539
13.	Jammu & Kashmir	5	700	760	43000
14.	Karnataka	14	1372	1429.41	12959
15.	Kerala	17	1167	1428.11	9315
16.	Madhya Pradesh	21	5042	3751.40	16430
17.	Maharashtra	16	2024	2410.75	33962
18.	Manipur	5	34	34	164
19.	Meghalaya	2	82	94	1244
20.	Mizoram	1	27	31	180
21.	Nagaland	2	272	385	1463
22.	Odisha (Orissa)	9	191	1371.80	10353
23.	Punjab	14	1800	1700	25000
24.	Rajasthan	15	800	1100	23000
25.	Sikkim	4	250	130	2750
26.	Tamil Nadu	9	2285	2852.41	16518
27.	Telangana	13	3250	2810	9615
28.	Tripura	1	195	109	5932
29.	Uttar Pradesh	36	1450	2663.82	18071
30.	Uttarakhand	6	1000	870	3200
31.	West Bengal	11	228	1635.74	12418
	Total	**297**	**36882**	**38280.01**	**426579**