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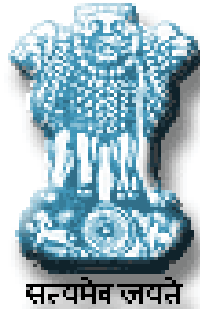
**STANDING COMMITTEE ON CHEMICALS AND FERTILIZERS
(2023-24)**

(SEVENTEENTH LOK SABHA)

**MINISTRY OF CHEMICALS AND FERTILIZERS
(DEPARTMENT OF FERTILIZERS)**

Action Taken by the Government on the Observations/Recommendations of the Committee contained in their Thirty-Ninth Report (Seventeenth Lok Sabha) on 'Nano-fertilizers for sustainable crop production and maintaining soil health' of the Ministry of Chemicals and Fertilizers (Department of Fertilizers)

FORTY- SEVENTH REPORT



LOK SABHA SECRETARIAT

NEW DELHI

December, 2023/ Agrahayana, 1945 (Saka)

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Presented to Lok Sabha on 19 December, 2023

Laid in Rajya Sabha on 19 December, 2023



**LOK SABHA SECRETARIAT
NEW DELHI**

December, 2023/ Agrahayana, 1945 (Saka)

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*to be appended

**COMPOSITION OF THE STANDING COMMITTEE ON CHEMICALS AND FERTILIZERS
(2023-24)**

Dr. Shashi Tharoor - Chairperson

**MEMBERS
LOK SABHA**

2. Shri Dibyendu Adhikari
3. Maulana Badruddin Ajmal
4. Shri C.N. Annadurai
5. Shri Deepak Baij
6. Shri Ramakant Bhargava
7. Shri Prataprao Patil Chikhalikar
8. Shri Rajeshbhai Naranbhai Chudasama
9. Dr. Sanjay Jaiswal
10. Shri Ramesh Chandappa Jigajinagi
11. Shri Kripanath Mallah
12. Shri Satyadev Pachauri
13. Smt. Aparupa Poddar
14. Shri Arun Kumar Sagar
15. Shri Muniyan Selvaraj
16. Dr. Sanjeev Kumar Singari
17. Shri Atul Kumar Singh
18. Shri Pradeep Kumar Singh
19. Shri Indra Hang Subba
20. Shri Parbhubhai Nagarbhai Vasava
21. Vacant*

RAJYA SABHA

22. Shri G. C. Chandrashekhar
23. Dr. Anil Jain
24. Shri Arun Singh
25. Shri Ram Nath Thakur
26. Shri Vijay Pal Singh Tomar
27. Vacant
28. Vacant
29. Vacant
30. Vacant
31. Vacant

SECRETARIAT

- | | | |
|-----------------------|---|-----------------|
| 1. Shri Chander Mohan | - | Joint Secretary |
| 2. Smt. Geeta Parmar | - | Director |
| 3. Shri Panna Lal | - | Under Secretary |

* Vacant *vice* Shri Uday Pratap Singh, MP(LS) who resigned his seat in LS w.e.f. 06.12.2023. [Lok Sabha Secretariat Notification No. 21/1(1)/2023/T(B) dated 6th December, 2023]

INTRODUCTION

I, the Chairperson, Standing Committee on Chemicals and Fertilizers (2023-24) having been authorized by the Committee, do present on their behalf this Forty-Seventh Report on Action taken by the Government on the Observations/Recommendations of the Committee contained in their Thirty-Ninth Report (Seventeenth Lok Sabha) on 'Nano-fertilizers for sustainable crop production and maintaining soil health' pertaining to the Department of Fertilizers, Ministry of Chemicals and Fertilizers.

2. The Thirty-Ninth Report was presented to Lok Sabha and also laid in Rajya Sabha on 21st March, 2023. The Department of Fertilizers, Ministry of Chemicals and Fertilizers furnished their replies on 11th August, 2023 indicating Action Taken on the Observations/Recommendations contained in the Thirty-Ninth Report. The Committee considered and adopted the Draft Report at their sitting held on 14th December, 2023.

3. An analysis of the Action Taken by the Government on the Observations/Recommendations contained in the Forty-Seventh Report (Seventeenth Lok Sabha) of the Committee is given in **Appendix-II**.

4. For ease of reference, Observations/Recommendations of the Committee have been printed in bold letters in the Report.

New Delhi;
14 December, 2023
23 Agrahayana, 1945 (Saka)

DR. SHASHI THAROOR
CHAIRPERSON,
STANDING COMMITTEE ON
CHEMICALS AND FERTILIZERS.

CHAPTER-I

REPORT

This Report deals with the Action-Taken by the Government on the observations/ recommendations of the Standing Committee on Chemicals and Fertilizers contained in their Thirty-Ninth Report (17th Lok Sabha) on 'Nano-fertilizers for sustainable crop production and maintaining soil health' of the Department of Fertilizers, Ministry of Chemicals and Fertilizers.

1.2 The Thirty-Ninth Report was presented to Lok Sabha and laid in Rajya Sabha on 21st March, 2023. The Report contained 21 Observations/Recommendations. Action Taken Replies in respect of all the Observations/Recommendations of the Report have been received and are categorized as under:

- (i) Observations/ Recommendations which have been accepted by the Government:

Rec. Para No. 1,2,3,4, 6, 7,8,9,10,11,12, 13, 14,16,17,18, 20 and 21

(Total=18)
Chapter-II

- (ii) Observations / Recommendations which the Committee do not desire to pursue in view of the Government's reply:

Rec. Para No.

(Total =00)
Chapter-III

- (iii) Observations / Recommendations in respect of which replies of the Government have not been accepted by the Committee and require reiteration:

Rec. Para No. 5, 15 and 19

(Total=03)

Chapter-IV

- (iv) Observations / Recommendations in respect of which final replies of the Government are still awaited:

Rec. Para No. Nil

(Total = 00)

Chapter-V

1.3 The Committee desire that the Action Taken Notes on the Observations/ Recommendations contained in Chapter-I of this Report may be furnished to the Committee within three months of the presentation of this Report.

1.4 The Committee will now deal with the action taken by the Government on some of their observations/Recommendations that require reiteration or merit comments.

(Recommendation SI. No. 2)

1.5 The Committee had noted in their original Report that IFFCO had developed other Nano fertilizers macronutrient grades - Nano DAP and secondary /micronutrient grades - Nano Zinc, Nano Copper, Nano Boron, Nano Sulphur, etc. Nano DAP was undergoing field trial and results of research conducted on it on more than ten crops had been submitted to the Department of Agriculture for further validations approval and inclusion under FCO. While observing the significance of Nano fertilizers in agriculture, the Committee had desired that both the Department of Fertilizers and IFFCO should expedite the process of inclusion of other Nano fertilizers under FCO to enable their commercial utilization and they be priced considerably cheaper than the prevailing price of their conventional bulk counterparts.

1.6 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“Nano DAP has been included in FCO, 1985 on 02.03.2023. Further, the price of one bottle of Nano Urea is Rs. 225 per Unit (500 ml bottle) and the price Nano DAP is Rs. 600 per Unit (500 ml bottle) which is less than their conventional counterpart”.

1.7 The Committee note with satisfaction that Nano DAP has been included in FCO, 1985 and that the price of a bottle of Nano DAP is less than its conventional counterparts. Further, keeping in view the significance of Nano fertilizers in agriculture, the Committee in their earlier Report had recommended to the Department of Fertilizers/IFFCO to expedite the process of inclusion of other

Nano fertilizers like Nano Zinc, Nano Copper, Nano Boron, Nano Sulphur, etc.

under FCO, to enable their commercial utilization. However, no update has been given in the matter. The Committee would like to be informed accordingly.

(Recommendation Sl. No. 3)

1.8 The Committee in their Report had noted with concern that in spite of the numerous benefits of Nano fertilizers which, inter-alia, include its low cost than the subsidized conventional fertilizers, at least 50 per cent saving in the use of chemical fertilizers, ease of carrying and storage, economy in terms of reduced transportation and warehousing cost, etc. no separate funds were allocated for research in Nano fertilizers. The Committee had strongly urged that the Department of Fertilizers should seek a sizeable amount of budget for research in Nano fertilizers through its fertilizer PSUs (even in coordination with IFFCO) for developing innovative, cost effective and efficient fertilizer products so that self-reliance is achieved in the Fertilizer Sector and substantial amount of foreign exchange on import of fertilizers is saved.

1.9 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“The price of one bottle of Nano Urea has been brought down to Rs. 225 per Unit (500 ml bottle) by IFFCO to make it more competitive with conventional urea. Department of Fertilizers is supportive to and encouraging its PSUs as well as other fertilizer companies for research in nano fertilizers and other innovative alternatives. IFFCO has signed technology transfer agreement with RCF and NFL for production of Nano Urea. This will enable leading PSUs of DoF i.e. RCF and NFL to enhance their R&D capabilities”.

1.10 The Committee in their Report had noted that Nano technology is a promising field of research for developing Nano fertilizers and has emerged as an innovative solution for addressing the issue of low or declining nutrient use efficiency (NUE) with minimal environment footprint and therefore desired that the Department of Fertilizers should seek a sizeable fund for nanotechnology based research activities so that it gets focused attention of its fertilizer PSUs for developing innovative fertilizer products which are cost effective and efficient. However, the Department’s reply is silent on this issue. The Committee, therefore,

reiterate their earlier recommendation and desire that the Department should take up the matter for allocation of sufficient funds with the Ministry of Finance for R&D in Nano-technology based fertilizers and keep them updated in the matter.

(Recommendation Sl. No. 5)

1.11 The Committee in their Report had noted with satisfaction that NFL and RCF are setting up their plants for production of Nano Urea at Nangal in Punjab and Trombay in Maharashtra respectively with the technology transferred by IFFCO. It also noted that the request made by the Department of Fertilizers to IFFCO for transferring the Nano Urea technology to other CPSUs viz. BVFCL and FACT, without any cost is also under consideration of IFFCO. The Committee, therefore, urged that this time too IFFCO would take a favorable decision on the request of the Department to transfer Nano urea technology on similar terms to BVFCL and FACT which would help enhance the production of nano urea in the country.

1.12 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“In order to enhance the production of nano urea, IFFCO has recently (April 2023) started commercial production of nano urea at its Phulpur and Aonla units in UP with 6 Cr bottles each annually. The observation of the committee has been noted”.

1.13 The Committee are not satisfied with the reply of the Department. In their Report, the Committee had desired that IFFCO should take a favorable decision on the request of the Department for transfer of Nano Urea technology to other CPSUs viz. BVFCL and FACT without any royalty as was done in case of NFL and RCF. However, the reply of the Department in this regard is not specific. The Committee, therefore, reiterate their earlier recommendation and expect the Department to be more specific while furnishing action taken reply.

(Recommendation Sl. No. 10)

1.14 While acknowledging the benefits of drones for spraying nano fertilizers or seed spreading and welcoming the decision of the Government to ban import of drones to

support indigenous production of drones in the country, the Committee had desired that the Government should take policy initiatives with a view to encourage drone adoption by States and Union Territories and simplify the procurement process of drones. Further, the Committee hoped that the Ministry of Civil Aviation would achieve their target to provide 10 drones for each village for fulfilling the requirement of more than 6 lakh villages in the country within a reasonable timeframe.

1.15 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“In order to ensure adequate numbers of drone manufactures and supplies in the country, Department of Fertilizers has formulated guidelines on “Development of Entrepreneurs for Drone Spraying of Liquid Fertilizers.” Department of Fertilizers has taken up the matter with Ministry of Civil Aviation at the highest level for seeking their assistance for widespread use of drones. Subsequently, a meeting was held under the Chairpersonship of Additional Secretary on 06.01.2023 with the stakeholders to discuss reliable models for using drones for spraying nano fertilizers including nano Urea. Department of Fertilizers is making efforts to develop the ecosystem of using drones for application of nano fertilizers”.

1.16 The Committee note with satisfaction that the Department of Fertilizers has formulated guidelines on “Development of Entrepreneurs for Drone Spraying of Liquid Fertilizers” in order to ensure adequate numbers of drone manufactures and supplies in the country. Further, the Department has taken up the matter with the Ministry of Civil Aviation to seek their assistance for the widespread use of drones. However, efforts made by the Ministry of Civil Aviation to achieve their target to provide 10 drones for each village to fulfill the requirement of more than 6 lakh villages in a reasonable timeframe and update on the matter has not been furnished. The Committee, therefore, reiterate their earlier recommendation to this extent.

It has further been stated that a meeting was held on 06.01.2023 under the Chairpersonship of Additional Secretary with stakeholders to discuss reliable models for using drones for spraying nano fertilizers including Nano Urea. The Committee would desire that such meetings should be held periodically with the stakeholders so as to undertake requisite mid-term correction for development of

models for using drones for spraying nano fertilizers while ensuring that they are available to the farmers at a cheaper cost.

(Recommendation Sl. No. 15)

1.17 While taking note of the assurance given, the Committee had desired that the Department of Fertilizers should take up the matter with the companies/ corporate houses for utilizing their Corporate Social Responsibility (CSR) fund to provide the facility of drones to the farmers for spraying Nano Urea at subsidized rates/ free of cost and to impart drone pilot training to the local village entrepreneurs and farmers.

1.18 In their Action Taken Reply furnished to the Committee, the Department of Fertilizers has stated as follows:

“The suggestion of the committee has been noted. Further, IFFCO is procuring 2500 drones to provide spraying solutions to the farmers for use of Nano Urea & Nano DAP. IFFCO has informed that these drones will be provided free of cost to the selected Rural Entrepreneurs. Ownership of Drone as well as well as Electric three wheelers (loader) will be transferred in favour of Entrepreneur on completion of spraying in targeted area. IFFCO shall arrange Drone Pilot Training for the Entrepreneurs. Entrepreneurs shall provide spraying services to the farmers at a concessional rate (lower by about Rs.100/- per acre)”.

1.19 The Committee are not satisfied with the reply of the Department of Fertilizers as it does not mention the initiatives, if any, taken for utilizing the Corporate Social Responsibility (CSR) fund by the companies/corporate houses for providing the facility of drones to the farmers for spraying of Nano fertilizers and also to impart drone pilot training to the local village entrepreneurs and farmers, as assured by the Department. Therefore, the Committee reiterate their recommendation and would desire to be updated on the matter.

(Recommendation Sl. No. 19)

1.20 While observing the submission of Department of Agricultural Research & Education (DARE) that the research trials to assess the long-term effects of Nano fertilizers on the nutritional quality of various crops had completed only one year/ one season, the Committee had recommended that concerted dedicated research be

conducted by the Department of Fertilizers in coordination with DARE/ICAR/ Agricultural universities covering all the major crops in all the agro-climatic regions of the country so as to thoroughly assess the merits and demerits of the use of nano fertilizers and establish their nutritional quality, bio-safety, efficacy, etc.

1.21 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“At present Nano Urea and Nano DAP are enlisted in FCO, 1986 based on the results on efficacy of IFFCO Nano Urea (Nitrogen) tested by few ICAR Institutes and SAUs. Experimental trials of Nano Nitrogen (Nano Urea) were undertaken through National Agriculture Research System (NARS) involving ICAR research institutes/state agricultural Universities on different crops like Paddy, Wheat, Mustard, Maize, Tomato, Cabbage, Cucumber, Capsicum, Onion”.

1.22 The Committee had observed that research trials to assess the long-term effects of Nano fertilizers on the nutritional quality of various crops had completed only one year/ one season and therefore recommended that concerted dedicated research be conducted by the Department in coordination with DARE/ICAR/ Agricultural universities covering all the major crops in all the agro-climatic regions of the country to assess their merits and demerits.

From the Action Taken reply, the Committee take note of the efforts made by the Department in establishing the efficacy of Nano DAP and Nano Urea. However, keeping in view the need for assessment of long-term effects of Nano fertilizers on the nutritional quality of various crops, the Committee reiterate that dedicated research be conducted to establish their nutritional quality, bio-safety, efficacy, etc.

CHAPTER – II

OBSERVATIONS/ RECOMMENDATIONS WHICH HAVE BEEN ACCEPTED BY THE GOVERNMENT

(Recommendation No. 1)

2.1 The Committee are gravely concerned to note that agriculture world wide is facing wide spectrum of challenges, such as stagnation in crop yields, low nutrient use efficiency (NUE), declining soil organic matter, multi-nutrient deficiencies, shrinking arable land and water availability. Fertilizers do provide nutrients needed by the plants for their optimal productivity. However, presently the farmers typically apply fertilizers through the soil by surface broadcasting, subsurface placement or mixing with irrigation water. It is worrisome that in this process, a large portion of bulk conventional fertilizers like urea is lost to the atmosphere or surface water bodies, thereby polluting the ecosystem. It is disheartening that fertilizer consumption in India is imbalanced, and Urea accounts for more than 82% of the nitrogenous fertilizers applied to majority of the crops. Furthermore, the Nitrogen, Phosphorus and Potassium (NPK) consumption ratio has widened from 4:3.2:1 in 2009-10 to 7:2.8:1 in 2019-20. Hon'ble Prime Minister has called for "Reduction in chemical fertilizer consumption especially Urea by 50%. Against this background, it is satisfying to note that Indian Farmers Fertilizer Cooperative Limited (IFFCO) has indigenously developed nano technology-based Nano Urea fertilizer and attempted to address the issue of imbalanced and excessive use of conventional Urea. Nano Urea is a source of nitrogen which is a major essential nutrient required for proper growth and development of a plant. Typically, nitrogen content in a healthy plant is in the range of 1.5 to 4%. Foliar application of Nano Urea at critical crop growth stages of a plant effectively fulfils its nitrogen requirement and leads to higher crop productivity. Ministry of Agriculture & Family Welfare (M/o A&FW) has notified Nano Urea as nano fertilizer under Fertilizer Control Order (FCO), GoI in February, 2021. Keeping in view the significance of nano fertilizers for agricultural needs of our country, the Committee applaud the efforts of IFFCO in developing Nano Urea. It is for the first time in the world that Nano Urea has been introduced to the farmers.

The steps taken by the Department of Fertilizers (DoF)/IFFCO and other concerned Ministries for availability, usage, promotion and adaptability of nano fertilizers in the country as deliberated over by the Committee, have been detailed in the succeeding paragraphs. At the same time, the Committee would like the Department of Fertilizers to ensure that the steps so taken do not suffer from the procedural delays and such delays, if any, are avoided with efficient, proper management and timely action.

2.2 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“Department of Fertilizers has an efficient system in place for proper management and timely action on critical issues. The observation of the committee has been noted”.

(Recommendation No. 2)

2.3 The Committee note that IFFCO has developed technology for bringing other nano fertilizers macronutrient grades - Nano DAP and secondary /micronutrient grades - Nano Zinc, Nano Copper, Nano Boron, Nano Sulphur, etc. in order to ensure eco-friendly sustainable agriculture. Nano DAP is under field trial. Research trials have been conducted on more than ten crops across thirty-four locations in twenty States and the results have been submitted to the Department of Agriculture for further validation and approval and its inclusion under FCO. In view of the significance of nano fertilizers in agriculture, the Committee urge the Department of Fertilizers and IFFCO to expedite the process of inclusion of other nano fertilizers, which have been developed by IFFCO and undergone sufficient field trials, under FCO to enable their commercial utilization. The Committee desire that other nano fertilizers should be priced considerably cheaper than the prevailing price of their conventional bulk counterparts.

2.4 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“Nano DAP has been included in FCO, 1985 on 02.03.2023. Further, the price of one bottle of Nano Urea is Rs. 225 per Unit (500 ml bottle) and the price Nano DAP is Rs. 600 per Unit (500 ml bottle) which is less than their conventional counterpart”.

COMMENTS OF THE COMMITTEE
(Please see Para No. 1.7 of Chapter – I of the Report)

(Recommendation No. 3)

2.5 The Committee observes that there are several benefits of nano fertilizers like they cost less than the subsidized conventional fertilizers. Also, IFFCO field trials have shown that a 500 ml bottle of Nano Urea can replace one 45 Kg. bag of conventional urea and thus can curtail the requirement of the same by at least 50 per cent. The current MRP of IFFCO's Nano Urea is Rs. 240 per 500 ml bottle which is approx. 10%

less than the conventional 45 Kg. urea bag having subsidized price of Rs. 266.50 per bag. Further, nano fertilizers are easy to carry and store. They are economical in terms of reduced transportation and warehousing cost. Besides, application of nano fertilizers results into better crop productivity and higher income for the farmers. IFFCO in collaboration with ICAR – KVKs has conducted 11,000 all India farmer field trials on 94 crops and found an average 8 % higher crop yield with the application of Nano Urea. This translates into Rs. 2000 to Rs. 5000 per hectare higher income for the farmers. Application of nano fertilizers has commensurate benefits in terms of better soil health, air and water quality, which ultimately will benefit the farmers through improvement in total factor productivity (TFP) of crop production systems. As per interim report of the International Rice Research Institute (IRRI), if India's 50 percent of rice cultivation area is brought under Nano Urea, it would lead to reduction in Green House Gas emission by 4.6 million tonnes. Even if 20-30 per cent of the urea that is going waste can be replaced and utilised, then the issue of green house gas emission can be appropriately addressed.

Despite many benefits of nano fertilizers, which are critical for our agriculture food production systems (FPS) to sustain the burgeoning population, the Committee regret to note that no separate funds have been allocated by the Department of Fertilizers for Nanotechnology. As Nano technology is a promising field of research for developing nano fertilizers that has emerged as an innovative solution for addressing the issue of low or declining nutrient use efficiency (NUE) with minimal environment footprint, it is imperative that the Ministry/Department of Fertilizers allocate a sizeable amount for nanotechnology based research activities through its fertilizer PSUs so that it gets focused attention for developing innovative fertilizer products which are cost effective and efficient. Fertilizer PSUs should be fully supported for work on common research projects along with IFFCO so that they contribute in development of varied nano fertilizers (both macro and micro nutrient based) and help to achieve self-reliance in the Indian Fertilizer Sector thereby saving a substantial amount of foreign exchange lost on import of fertilizers which has shown an increasing trend over the years.

2.6 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“The price of one bottle of Nano Urea has been brought down to Rs. 225 per Unit (500 ml bottle) by IFFCO to make it more competitive with conventional urea. Department of Fertilizers is supportive to and encouraging its PSUs as well as other fertilizer companies for research in nano fertilizers and other innovative alternatives. IFFCO has signed technology transfer agreement with RCF and NFL for production of Nano Urea. This will enable leading PSUs of DoF i.e. RCF and NFL to enhance their R&D capabilities”.

COMMENTS OF THE COMMITTEE
(Please see Para No. 1.10 of Chapter – I of the Report)

(Recommendation No. 4)

2.7 The Committee note with concern a continuous increase in the import of urea over the years to meet the demand of fertilizers in our country. During 2016-17, the import of urea was 54.81 lakh MT and it has reached to 98.28 lakh MT during 2020-21. Subsidy burden on account of urea import constitutes 26 % of the overall urea subsidy paid in a year by the Government. Amid the prevailing circumstances, the Committee believe that judicious application of urea is the need of the day and nano fertilizers can definitely play an important role to reduce the dependency of our country on the import of urea. As submitted, with the precise application of nano fertilizers at critical crop growth stages, about 25 to 50% replacement of convention fertilizers is possible. Resultantly, with the use of Nano Urea, GOI Exchequer can save approx. 3 billion USD equivalent to around Rs. 25,000 crore in subsidy bill per year considering subsidy of approx. Rs. 20,000 per MT of Urea. The Committee are glad to learn that by the year 2023, IFFCO's two plants will be operational with total production of 11 crore bottles every year. The expected replacement is 50 lakh MT of conventional urea. By 2023-24, 5 plants will be operational with production of 28 crore bottles per year and the expected replacement is 127 lakh MT of conventional urea. By 2025-26, all the proposed eight plants will be operational and the total production would be 44 crore bottles every year and they are expected to replace 200 lakh MT of urea. The Committee find the figures for expected replacement of urea encouraging and trust that DoF/IFFCO would take further steps to enhance the production of Nano Urea towards making our country self-reliant for meeting the requirement of fertilizers.

2.8 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“Department of Fertilizers has effectively facilitated the transfer of technology of Nano urea from IFFCO to RCF and NFL to augment nano urea production. The observation of the committee has been noted”.

Recommendation No. 6

2.9 The Committee are aware that the Department of Fertilizers has a larger role to play in making available the required quantum of nano fertilizers to fulfill the need of farmers of the entire country. The Committee are of the strong conviction that Public and Private Sector Companies desirous of manufacturing nano fertilizers can do much better and should be given every possible support by the Government. In this regard, the Committee would like to impress upon the Department to take up the matter with the Ministry of Finance at the appropriate level to bring production of nano fertilizers under the Production Linked Incentive (PLI) scheme in order to give a boost to the fertilizer industry with a view to increasing the production of nano fertilizers.

2.10 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“As on date, there is no such proposal in the Department to bring Nano Urea under Production Linked Incentive (PLI) scheme. But it is informed that Department is facilitating and encouraging fertilizer companies to adopt nano fertilizers; State Governments and IFFCO have been asked to make Nano fertilizers available at fertilizer retail shops/ PMKSKs. The suggestion of the committee has been noted”.

Recommendation No. 7

2.11 The Committee are informed that as our country do not have sufficient raw materials, gas, oil, rock phosphate, potash needed to produce fertilizers, there is an urgent need to think differently to be self-reliant. The Committee share the apprehension of the Department that in case of dependency for raw materials on other countries, our country would be prone to exploitation as fertilizer raw material is available only in a few countries. In view of the foregoing, the Committee recommend that the Department of Fertilizers should play a proactive role to establish long term agreements for import of fertilizers' raw materials and set-up joint venture plants in countries rich in fertilizers' raw materials with buy back arrangements thereby assuring access to acquisition of the fertilizers' raw materials abroad, through the Ministry of External Affairs, Ministry of Finance and other concerned Departments/ agencies. All necessary steps are needed to be taken by the Government to avoid any hinderances in production of nano fertilizers. This may help achieve self-reliance in the fertilizer sector while ensuring regular supply of fertilizers and raw materials at reasonable rates and saving precious foreign exchange by decreasing the import burden of the country. Besides, the Department may approach the Ministry of Finance to rationalize/ exempt the Basic Custom Duty on fertilizers' raw materials (i.e. P&K and other macro and micro nutrients) so that they are available at reasonable price thus incentivizing setting up of

nano technology based plants in the country for enhancing the production of nano fertilizers.

2.12 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“P&K Fertilizers under the Nutrient Based Subsidy (NBS) scheme is decontrolled and thus the decisions for production, import of P&K fertilizers are taken by the manufactures/importers as per business plans and requirement projected by the States during Kharif and Rabi.

Department of Fertilizers has taken several steps to reduce dependency on import of raw materials for fertilizers. In addition to monitoring the supply situation on daily basis, DoF has been proactively facilitating fertilizer companies to set up Joint Ventures, long term tie ups and short term supplies of critical P&K fertilizers from alternative sources from different countries in consultation with other concerned ministries such as – Ministry of External Affairs, Ministry of Finance, Department of Commerce etc.

Further, in December 2021, DoF had already requested Ministry of Finance for exempting custom duty on fertilizers' raw materials. However, M/o Finance in its reply had stated that the custom duty on fertilizers raw materials is already on a lower side. Public Sector Companies of NFL and RCF are also involved in setting up of nano urea along with IFFCO”.

Recommendation No. 8

2.13 The Committee are made to understand that use of Nano Urea will act as one of the tools to double the income of farmers. It has higher nutrient use efficiency which will boost crop production and would increase farmers' income. Based on 11,000 all India farmer field trials conducted on 94 crops by IFFCO in collaboration with ICAR – KVKs, an average 8 % higher crop yield was achieved with the application of Nano Urea, which translates into Rs. 2000-Rs. 5000 per hectare higher income for the farmers. Economic benefit is even more in case of high value/high MSP crops. With the use of Nano Urea, there is input cost saving for farmers in terms of purchase of less fertilizer. Average 45 – 90 Kg less subsidized urea would be applied per acre of field which translates into Rs.266-Rs.532 per acre cost saving for the farmers in terms of lower purchase cost for the farmers. Despite advantages, the practical implementation of nano-fertilizers still has a long way to go. The Committee realize that the biggest challenge for any game changer technology is its adoption on a larger scale by common masses. In the instant case, the biggest challenge being faced, is the adoption of Nano

Urea by the small and marginal farmers. Department of Fertilizers is taking a lot of activities for promotion of Nano Urea viz. village level demonstration on Nano Urea application through progressive farmers, creating awareness for use of Nano Urea in kisan sammelans. Films have also been made in different regional languages and the social media is extensively being used for dissemination of information on Nano Urea and its use among farmers. Besides, regular talks and panel discussions on radio, DD Kisan channel and other television channels are being held. One training module is being developed for farmers for crop specific right dose of Nano Urea. Further, the State Governments are repeatedly requested, in their monthly meetings, to take up the initiative to popularize Nano Urea amongst the farmers. IFFCO has also taken organised promotional and extension programmes for use of Nano Urea across the country through Crop Demonstrations, Short video films of Nano Urea, Print & Electronic, Media and Mass Media Campaigns, Publicity Material, Gifts & Awards, Dedicated Internet Site, Training & Awareness programmes and State-wise Flag off Programmes& Endorsement by Opinion Leaders, Government Officials and Scientists, etc.

While appreciating the efforts being made by DoF/IFFCO to promote use of Nano Urea, the Committee feel that a lot of work can still be done in this direction. The Committee are of the opinion that enhancement of the crop produces and income benefits to the farmers should be given adequate focus in the promotional programmes of nano fertilizers. Once farmers are convinced of these benefits, they would be open to use the related information through various promotional activities organized by Department of Fertilizers and IFFCO. The faster the farmers of our country adopt the Nano Urea, the sooner the country will be able to move towards complete Atma Nirbharta in the fertilizer sector.

2.14 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“In addition to above mentioned media activities, Department of Fertilizers has been facilitating live field demonstrations to farmers, with the help of IFFCO and other fertilizer companies to convince farmers through interaction with field experts and progressive farmers using nano urea in their farms .States are encouraged to take up large scale demonstrations of nano urea and assistance is ensured under Agriculture schemes such as National Food Security Mission, Rashtriya Krishi Vikas Yojana etc. Nano urea is also included under supply plan to ensure availability at ground level. Availability of nano urea at PM Kisan Samrudhi Kendras (PMKSKs) is also ensured”.

Recommendation No. 9

2.15 The Committee note that an agriculture sprayer is a special type of farm equipment that a farmer uses to apply liquid or powder agricultural chemicals and fertilizers on farm fields. For spraying of liquid Nano Urea, the farmers use a hand operated or battery-operated knapsack sprayer of 15 or 16 litres water tank capacity. They also use power or mist sprayers / boom sprayers of 200 litres or more capacity. Cost of manual sprayers, battery operated sprayers and power sprayers is in the range of Rs. 1200-1500, Rs. 3000-4500 and Rs 6000-10,000 per sprayer, respectively. In this regard, Department of Fertilizers has submitted that a collective and community spraying with the help of cooperatives, retailers as well as custom hiring of sprayers by village level youth/ FPOs are being explored for effective spray of Nano Urea. The Committee would desire the Department to speed up their efforts for provisioning of effective and cheaper means of spraying of nano fertilizers to the farmers.

2.16 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“Department of fertilizers have urged fertilizer companies to come up with farmer friendly and cheaper means of spraying of nano fertilizers. As per the information received, IFFCO will procure 2500 drones for training rural entrepreneurs. Further, Coromandel International has invested in drone start up Dhaksha and raised its stake to 51%. It will facilitate its presence in the fast-growing Unmanned Aerial Systems (UAS) segment where drones and its applications are expected to exponentially grow in agriculture. The observation of the Committee has been noted”.

Recommendation No. 10

2.17 The Committee note that drones are also used to spray nano fertilizers. Spreading fertilizer or seed spreading with a drone allows a user to reach places that traditionally would be hard to access and at a faster pace. As informed by the Ministry of Civil Aviation, import of drones has been banned to support the indigenous production of drones in the country. The Committee strongly support the decision of the Government in this regard and desire that such facilities should be encouraged and established within the country itself. As submitted, the Government has come up with good policies and have introduced incentives and engaged three world-famous type certification bodies for drones viz. Tata Quality, TQC of US and Bureau Veritas. Therefore, things have been liberalized to create demands and policy & procedural bottlenecks removed. The Committee would like to be assured that the Government has taken policy initiatives with a view to encourage drone adoption by States and Union Territories and procurement process of drones have been simplified. Keeping in view that the production of drones have just started and also in view of the initiatives taken by

the Government, the Committee trust that target set by the Ministry of Civil Aviation to provide 10 drones for each village and fulfill the requirement of more than 6 lakh villages in the country would be accomplished within a reasonable time frame by taking care of the avoidable delays. The Committee would like the Department of Fertilizers to provide an update in the matter from time to time.

2.18 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“In order to ensure adequate numbers of drone manufactures and supplies in the country, Department of Fertilizers has formulated guidelines on “Development of Entrepreneurs for Drone Spraying of Liquid Fertilizers.” Department of Fertilizers has taken up the matter of with Ministry of Civil Aviation at the highest level for seeking their assistance for widespread use of drones. Subsequently, a meeting was held under the Chairpersonship of Additional Secretary on 06.01.2023 with the stakeholders to discuss reliable models for using drones for spraying nano fertilizers including nano Urea. Department of Fertilizers is making efforts to develop the ecosystem of using drones for application of nano fertilizers”.

Comments of the Committee
(Please see Para No. 1.16 of Chapter – I of the Report)

(Recommendation No. 11)

2.19 The Committee do appreciate that the Ministry of Agriculture & Farmers Welfare have included drones as part of agricultural machinery. However, in view of the fact that a 25 kg agricultural drone costs between Rs. 8 to 10 lakh, the Committee find it extremely difficult for the small and marginal farmers, which constitute about 86% farmers, to afford the same. The Committee are aware that the Government on 15.09.2021 has approved the Production Linked Incentives (PLI) Scheme for drones and drone components. The PLI scheme allocates Rs. 120 crore for drones and drone components spread over three financial years which is almost twice the combined turnover of Rs. 60 crore of all domestic drone manufacturers during 2020-21. As submitted, out of 120 manufacturers of drones and about 180-200 service providers, 23 drone/ component manufacturers having a turnover of Rs. 2 crore have been found eligible for the PLI Scheme. As the PLI scheme for drones and drone components is in place, the Committee are hopeful that the drone manufacturing industry would play a significant role and supplement the Governments’ efforts. In other words, while the industry expects the Government to display a trust based facilitator attitude by way of creating a conducive manufacturing environment, the Committee expect the industry to display exemplary focus on drone

manufacturing for domestic agricultural use by way of investing significantly thus ensuring the growth of the drone manufacturing industry up to the expected level.

2.20 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“Department of Fertilizers is playing its pivotal role in encouraging fertilizer companies in creating a drone-conducive agriculture environment for spraying of nano fertilizers. The observation of the committee has been noted”.

Recommendation No. 12

2.21 The Committee note that SOP for use of drone to spray the nano fertilizers in agriculture is under consideration of the Department of Fertilizers, wherein 90% of drone price would be provided through Agriculture Infrastructure Fund (AIF) for those entrepreneurs who wish to avail the facility of drones. The Committee desire that the Department in coordination with all the concerned Ministries/Departments and other stakeholders seek for sufficient budgetary support to the AIF for provisioning of drones at subsidized rates to the Kisan Vikas Kendras, Custom Hire Centres and Agricultural Universities, etc. The Committee would desire that SOP for use of drone for spray of nano fertilizers should be finalized at the earliest. The Committee further desire that Department of Fertilizers should take similar measures to ensure the availability of fertilizer sprayers for enhanced and better productivity of crops.

2.22 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“The observation of the committee has been noted. Further, Department of Fertilizers has already issued guidelines for development of entrepreneurs for drone-based spraying of liquid fertilizers. As per the information received, IFFCO will procure 2500 drones for training rural entrepreneurs. Further, Coromandel International invested drone start up Dhaksha and raise its stake to 51%. It will facilitate It’s presence in the fast-growing Unmanned Aerial Systems (UAS) segment where drones and its applications are expected to exponentially grow in agriculture. Moreover, calibration and compatibility studies are conducted for Nano DAP and WSF products for key crops and geography covering 5 states and 1000 + Acres. Also, Pilot projects on commercial drone spraying are planned for Andhra Pradesh and Telangana states for coming Kharif season and having plan to expand pan India next year”.

Recommendation No. 13

2.23 The Committee are further informed that Department of Fertilizers has also issued the guidelines for development of entrepreneurs for spraying of liquid fertilizers by drones and they are in regular touch with the stakeholders for promotion of the said guidelines, which will ensure availability of drones to spray fertilizers at cheaper cost. The Committee would desire that it should be closely monitored that the guidelines for development of entrepreneurs for spraying of liquid fertilizers by drones are strictly followed so that their very purpose to ensure availability of drones at cheaper price is achieved.

2.24 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“The observation of the committee has been noted. As per the information received, IFFCO will procure 2500 drones for training rural entrepreneurs. Further, Coromandel International invested drone start up Dhaksha and raise its stake to 51%. It will facilitate its presence in the fast-growing Unmanned Aerial Systems (UAS) segment where drones and its applications are expected to exponentially grow in agriculture. Moreover, calibration and compatibility studies are conducted for Nano DAP and WSF products for key crops and geography covering 5 states and 1000 + Acres. Also, Pilot projects on commercial drone spraying are planned for Andhra Pradesh and Telangana states for coming Kharif season and having plan to expand pan India next year”.

(Recommendation No. 14)

2.25 It is satisfying to note that a drone takes only 5 minutes to complete spraying on one acre of the field and a single day to spray 80 acres of the field whereas a manual sprayer takes one full day to spray one acre of the field. The Committee are, however, not happy to note that though the rates fixed for spray by drones as per the guidelines on the development of entrepreneurs for drone spraying of liquid fertilizers is Rs.200/- per acre per day, the farmers are being charged more i.e. @ Rs.500/- per acre per day inclusive of its transportation charges upto the farm gate. Hence, though the nano fertilizers have several benefits, the concern of the farmers with regard to the higher cost of drone spray application remains unattended. A representative of Tamil Nadu Agricultural University (TNAU) reacted to the concern of the Committee and submitted that the transportation charges for drones up to the farm gates can be subsidized. The Committee would like to be assured that the Department would take all necessary steps to resolve the anomalies with regard to the rates of drone spray and address the concern of the farmers in this regard so that more farmers avail the facility of drones for spraying of fertilizers.

2.26 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“The suggestion of the committee has been noted. Further, IFFCO is procuring 2500 drones to provide spraying solutions to the farmers for use of Nano Urea & Nano DAP. IFFCO has informed that these drones will be provided free of cost to the selected Rural Entrepreneurs. Ownership of Drone as well as well as Electric three wheelers (loader) will be transferred in favour of Entrepreneur on completion of spraying in targeted area. IFFCO shall arrange Drone Pilot Training for the Entrepreneurs. Entrepreneurs shall provide spraying services to the farmers at a concessional rate (lower by about Rs.100/- per acre)”.

Recommendation No. 16

2.27 The representative of Tamil Nadu Agricultural University (TNAU) has informed that they have 40 research stations, 18 colleges and 14 KVKs and in all their units, they have a drone. They also propose to give a custom hiring and for that they have the complete SOP. Also, to improve the manpower for drone operation, the Tamil Nadu Government has taken a special initiative to include drone training in diploma course in agricultural engineering. It is a 10 hours course and within two weeks one gets trained and get license to operate drones. Tamil Nadu State Assembly has sanctioned a project worth Rs. 11 crore to buy 60 drones. There is a drone laboratory in TNAU where several parameters of flight height, swath, speed of the drones are assessed. Tamil Nadu Government has also requested the TNAU to train unemployed youth for drone usage and for that efforts are being made. Also, several companies are ready to sign MoUs to promote drone technology. The Committee welcome the initiatives taken by the State Government of Tamil Nadu/TNAU in drone usage for agricultural needs and promotion of drone technology. The Committee recommend to the Department of Fertilizers to pursue with the other State Governments to follow suit to cater to the need of the farmers for use of drone in spraying of fertilizers/nano fertilizers.

2.28 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“DoF circulated guidelines on Development of Entrepreneurs for Drone Spraying of Liquid Fertilizers to all the stakeholders including all the states and UTs. Thereafter, DoF has taken a review meeting on 12.08.2022 with State Governments to expedite the matter. As recommended by the Committee, the matter will again be pursued with other States/ UTs”.

Recommendation No. 17

2.29 The Committee find that there is limited number of drone training centres which makes it difficult for the farmers to avail the training facility. As per the submission of Ministry of Civil Aviation, they have planned for 8000 drone training schools for 800

districts in the country with an average of 10 schools per district. However, it involves certain process of approval. The Committee desire that the Department of Fertilizers should devise a definite plan in coordination with the Ministry of Agriculture & Farmers Welfare, Ministry of Civil Aviation, Krishi Vigyan Kendras, Kishan Vikas Kendras, Farmer Producer Organizations (FPOs), Customer Hire Centres, Farmers Cooperatives, Agricultural Universities, fertilizer manufacturing companies, etc. for conducting regular training programmes to train the entrepreneurs and farmers throughout the country about appropriate usage of various types of fertilizer sprayers including drones for precision and targeted application of right dosage of nano fertilizers, etc. on the crops.

2.30 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“DoF has issued the guidelines regarding the “Development of Entrepreneurs for Drone Spraying of Liquid Fertilizers.” Further, IFFCO is procuring 2500 drones to provide spraying solutions to the farmers for use of Nano Urea & Nano DAP. IFFCO has informed that these drones will be provided free of cost to the selected Rural Entrepreneurs. Ownership of Drone as well as well as Electric three wheelers (loader) will be transferred in favour of Entrepreneur on completion of spraying in targeted area. IFFCO shall arrange Drone Pilot Training for the Entrepreneurs. Entrepreneurs shall provide spraying services to the farmers at a concessional rate (lower by about Rs.100/- per acre)”.

Recommendation No. 18

2.31 The Committee note that the Sub-Mission on agricultural mechanization (SMAM) has been introduced by the Government of India. Eligible farmers can apply for the scheme and can buy modern agricultural equipment with 50% to 80% subsidy. This scheme, therefore, will facilitate the availability of drones in the villages with the active cooperation of the State Governments. A representative of the Ministry of Civil Aviation during evidence admitted that implementation of the SMAM scheme is little slow. The Committee recommend that the Department of Fertilizers should work in unison with the Ministry of Civil Aviation and State Governments and others concerned agencies for effective implementation of SMAM so as to achieve its objective of facilitating the availability of drones to the farmers at the Block/ village level throughout the country.

2.32 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“The observation of the committee has been noted. As per the issued guidelines of DoF, upto 90% of the total cost of Drones along with extra batteries is to be financed through Agri Infra Fund (AIF)”.

(Recommendation No. 20)

2.33 The Committee learn that during the field trials on varieties of crops with the application of Nano Urea, it was found that there was 25 to 50 percent saving in top dress nitrogen. The Committee desire that a thorough audit of the field trials on application of nano fertilizers may be got conducted by the Department in coordination with other Ministries/ organizations, to assess the reasons for huge variation (25 to 50 percent) in top dress nitrogen saving on different crops and in different regions, by the premier agricultural research institutes, etc.; the reasons for variance and effects may be scientifically analyzed and a crop specific Standard Operating Procedure (SOP) for appropriate application of Nano Urea be devised so that the variance range in this regard may be minimized/ removed.

2.34 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“The observation of the committee has been noted. As suggested by the Committee, Department of Fertilizers will take up the issue with DA&FW and ICAR”.

Recommendation No. 21

2.35 The Committee further desire that as assured, the Department of Fertilizers would take up the matter for setting up of quality testing laboratories throughout the country to ensure production and sale of quality nano fertilizers with the Department of Agriculture and Farmer’s Welfare. The Committee would like to be kept informed of the progress in the matter.

2.36 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“As per the information received from Department of Agriculture and Farmer’s Welfare (DA&FW), they have initiated an administrative procedure for creating facilities for quality testing of nano fertilizers that includes equipping already existing labs for quality testing of nano-fertilizers”.

CHAPTER – III

**OBSERVATIONS / RECOMMENDATIONS WHICH THE COMMITTEE DO NOT
DESIRE TO PURSUE IN VIEW OF THE GOVERNMENT'S REPLY**

NIL

CHAPTER – IV

OBSERVATIONS/RECOMMENDATIONS IN RESPECT OF WHICH THE REPLIES OF THE GOVERNMENT HAVE NOT BEEN ACCEPTED BY THE COMMITTEE AND REQUIRE REITERATION.

Recommendation No. 5

4.1 The Committee draw some satisfaction from the fact that IFFCO has transferred the technology of Nano Urea to NFL and RCF and they are setting up their plants with the technology transfer at Nangal in Punjab and Trombay in Maharashtra, respectively. Department has now requested IFFCO to transfer the Nano Urea technology to other CPSUs viz. BVFCL and FACT also without any cost. The matter is stated to be under consideration before the management of IFFCO. The Committee are aware that IFFCO has transferred the technology to NFL and RCF without any royalty. The Committee trust that a favorable decision would be taken by IFFCO this time too on an urgent basis with a view to enhance the production of nano urea to meet its increasing demand because of the multiple benefits of Nano Urea.

4.2 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“In order to enhance the production of nano urea, IFFCO has recently (April 2023) started commercial production of nano urea at its Phulpur and Aonla units in UP with 6Cr bottles each annually. The observation of the committee has been noted”.

COMMENTS OF THE COMMITTEE (Please see Para No. 1.13 of Chapter – I of the Report)

Recommendation No. 15

4.3 The Committee hope that as assured, the Department of Fertilizers would take up the matter with the companies/ corporate houses for utilizing their Corporate Social Responsibility (CSR) fund to provide the facility of drones to the farmers of a particular ear-marked area (adopted by them) for spray of Nano Urea at subsidized rates / free of cost and to impart drone pilot training to the local village entrepreneurs and farmers.

4.4 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“The suggestion of the committee has been noted. Further, IFFCO is procuring 2500 drones to provide spraying solutions to the farmers for use of Nano Urea & Nano DAP. IFFCO has informed that these drones will be provided free of cost to the selected Rural Entrepreneurs. Ownership of Drone as well as well as Electric three wheelers (loader) will be transferred in favour of Entrepreneur on completion of spraying in targeted area. IFFCO shall arrange Drone Pilot Training for the Entrepreneurs. Entrepreneurs shall provide spraying services to the farmers at a concessional rate (lower by about Rs.100/- per acre)”.

COMMENTS OF THE COMMITTEE
(Please see Para No. 1.19 of Chapter – I of the Report)

Recommendation No. 19

2.28 The Committee gather from the sub-mission of Department of Agricultural Research & Education (DARE) that long-term effects of nano fertilizers on the nutritional quality of various crops cannot be drawn as till date the research trials being conducted have completed only one year and in most cases, only one season. The Committee would recommend that concerted long-term dedicated research may be got conducted by the Department of Fertilizers in active coordination with DARE/ ICAR, all the Agricultural universities/ fertilizer manufacturing companies, etc. by covering all the major crops in all the agro-climatic regions and soil types of the country so as to thoroughly assess the merits and demerits of the use of nano fertilizers and establish nutritional quality, bio-safety, efficacy and reliability of the harvested produce of nano fertilizers treated crops.

2.29 In their Action Taken Note furnished to the Committee, the Department of Fertilizers has stated as follows:

“At present Nano Urea and Nano DAP are enlisted in FCO, 1986 based on the results on efficacy of IFFCO Nano Urea (Nitrogen) tested by few ICAR Institutes and SAUs. Experimental trials of Nano Nitrogen (Nano Urea) were undertaken through National Agriculture Research System (NARS) involving ICAR research institutes/state agricultural Universities on different crops like Paddy, Wheat, Mustard, Maize, Tomato, Cabbage, Cucumber, Capsicum, Onion”.

COMMENTS OF THE COMMITTEE
(Please see Para No. 1.22 of Chapter – I of the Report)

CHAPTER – V

**OBSERVATIONS/RECOMMENDATIONS IN RESPECT OF WHICH THE FINAL
REPLEIS OF THE GOVERNMENT ARE STILL AWAITED**

NIL

New Delhi;
14 December, 2023
23 Agrahayana, 1945 (Saka)

DR. SHASHI THAROOR
Chairperson,
Standing Committee on
Chemicals and Fertilizers.

ANALYSIS OF ACTION TAKEN BY THE GOVERNMENT ON THE RECOMMENDATIONS CONTAINED IN THE THIRTY-NINTH REPORT (SEVENTEENTH LOK SABHA) OF THE STANDING COMMITTEE ON CHEMICALS AND FERTILIZERS (2023-24) ON 'NANO-FERTILIZERS FOR SUSTAINABLE CROP PRODUCTION AND MAINTAINING SOIL HEALTH' OF THE MINISTRY OF CHEMICALS AND FERTILIZERS (DEPARTMENT OF FERTILIZERS).

	Total No. of Recommendations	21
I	Observations/Recommendations which have been accepted by the Government: (Recommendation Nos. 1,2,3,4, 6, 7,8,9,10,11,12, 13, 14,16,17,18, 20 and 21)	18
Percentage of Total		86%
II	Observations/Recommendations which the Committee do not like to pursue in view of the Government's replies: NIL	00
Percentage of Total		0%
III	Observations/Recommendations in respect of which the replies given by the Government have not been accepted by the Committee and which require reiteration: (Recommendation No. 5, 15 and 19)	03
Percentage of Total		14%
IV	Observations/Recommendations in respect of which the final replies of the Government are still awaited: Nil	00
Percentage of Total		0%