

**Cost Benefit Analysis of Nano Urea & Horticulture Crops  
– A Case Study of Jangareddigudem, Eluru Dist., Andhra  
Pradesh**

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**Introduction**

Technology is the evergreen attraction to human kind to lead a comfortable life since time immemorial. The scientific community has always been very helpful in serving the society with their hard inputs in finding latest ever technologies to make our life easier and better every time. Nano Technology is today's buzzword everywhere around the globe. In advancing the advanced technology, the role of basic sciences like Physics and Chemistry is quite crucial as they help us in better understanding of the dynamic characteristics of various materials as their size starts shrinking. The term NANO not only simply denotes the decreased size but also very essential in decreasing the transportation and packing costs for different set of uses in various economic activities and thereby increasing the benefits economically and environmentally too. The futuristic invention of Nano Urea in India for the first time in the world by Ramesh Ralia of IFFCO (Indian Farmers Fertilizers Cooperative) seems highly beneficial to the farming community in our country. Nano Urea according to 39<sup>th</sup> report on fertilizers of standing committee of Lok Sabha by the Ministry of Chemicals and Fertilizers, 2022-23, is cost effective, environment and farmer friendly product. It has the potential of reducing the fertilizer subsidy burden of the government and our people in further. At this juncture focus on more spending on R&D in terms of GDP at national level and creating awareness among the masses through the Think Fresh Incubator in CSTS Govt.Kalasala at local level are highly valuable to reap the positive benefits of this wonderful technology.

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### **Research Questions**

1. What is the level of understanding of farming community of Jangareddigudem Revenue Division region about Nano Urea.
2. What are the costs and benefits of adopting Nano Technology based Nano Urea in the Jangareddigudem Revenue Division region.

### **Methodology**

This study is mostly based on secondary resources of data and primary data sources like personal interactions with the local officials of AP Government and farmers in this region with simple graphical, diagrammatic presentation.

**Keywords:** Nano Urea, Jangareddigudem, Cost benefit analysis

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### Nano Urea in Liquid Form

45 Kilo Grams Kgs Powderform45



LIQUIDFORM

500

GRAMS



The role of nitrogen is highly commendable in the growth process of various agricultural and horticultural crops. Despite the largescale availability of nitrogen in natural air, plants need to be fed nitrogen with different human interventions in the process of cultured crops/plants in agriculture and horticulture activities. The urea consisting of nitrogen is being supplied in the form of powder earlier, is now replaced by the liquid form titled NANO UREA. This marvellous IFFCO invention is helpful in optimising the economic issues in Indian Agriculture scenario in further.

**Cost Benefit Analysis Of Nano Urea**

SL.NO.	ITEM	COSTS	BENEFITS
1	SOLID UREA BAG	ENVIRONMENTAL COSTS	
		HIGH COST/SUBSIDY	
		TRANSPORTATION/PACKING PROBLEMS	
2	NANO LIQUID BOTTLE	Nano materials are perceived to be toxic in nature	ENVIRONMENTAL BENEFITS
			LOWCOST/NO SUBSIDY BURDEN
			EASY TO CARRY & LESS WEARHOUSING PROBLEMS
			INCREASED OUTPUT
			DRONES CAN BE USED TO SPRAY – REDUCED EXPENSES

**Findings**

- 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. But, a

25 kg agricultural drone costs between Rs. 8 to 10 lakh, the Govt. Committee find it extremely difficult for the small and marginal farmers, which constitute about 86% farmers, to afford the same.

- Govt. introduced PRODUCTIVITY LINKED SCHEME PLI to help the drone industry.
- 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.
- 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.
- As regards the efficacy of nano fertilizer, it has further been added that foliar application of Nano Urea has use efficiency greater than 80%. Nano Urea through foliar spray at critical crop growth

stages can effectively reduce the urea requirement by 50 %. Thus, 1 bag (45 Kg) of urea per acre can be reduced through application of one 500 ml bottle of Nano Urea. With average consumption of urea to the tune of 330 lakh MT every year and targeted replacement of upto 25-50% of urea, at least 83 lakh MT to 165 lakh MT of Urea is expected to be reduced by Nano Urea over the years.

- The results of the trials indicated that in the case of rice, Nano Urea saved topdressed nitrogen in the range of 25-50% with additional yield of 1.32 to 14.5%, which gave an overall benefit of Rs. 75 to Rs. 9832/ha.
- The various benefits of Nano fertilizers over conventional fertilizers are enumerated as under:
  - 1. Price Advantage - They cost less than the subsidized conventional fertilizers resulting into lower input cost for the farmers.
  - 2. Advantage in terms of Logistics and Warehousing - They are easy to carry and store thus, they are economical in terms of reduced transportation and warehousing cost.
  - 3. Saving of Bulk Fertilizer- With the application of nano fertilizers per hectare, less number of subsidized fertilizer bags are required which leads to saving in fertilizer cost and additional income to the farmers.
  - 4. Economic Benefit due to additional crop yield - Application of nano fertilizers results into better crop productivity and higher income for the farmers. Based on 11,000 all India farmer field trials conducted on 94 crops by IFFCO in collaboration with the Indian Council of Agricultural Research (ICAR) – Krishi Vigyan

Kendras(KVKs), average 8 % higher crop yield was achieved with the application of Nano Urea; which translates into Rs. 2000 – Rs. 5000 per hectare higher income to the farmers. Economic benefit is even more in case of high value / high MSP crops. It will act as one of the tool to double the income of farmers as committed by our Hon'ble Prime Minister. 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.

- 5. Enhancement in total factor productivity (TFP) of our crop production systems – Application of nano fertilizers has commensurate benefits in term of better soil health, air and water which will ultimately benefit the farmers through improvement in total factor productivity (TFP) of our crop production systems.

(source: Ministry of Fertilizers and Chemicals Report 2022-23)

#### PRIMARY DATA COLLECTION IN JANGAREDDIGUDEM GROWMORE OUTLET



#### PRIMARY DATA COLLECTION IN JANGAREDDIGUDEM



**MANASAPUTRIKA FARMER PRODUCER ORGANISATION  
FPO,**



**PRIMARY DATA COLLECTION IN JANGAREDDIGUEM  
PACS ( PRIMARY AGRICULTURAL COOPERATIVE SOCIETY)**



After a careful collection of primary data, the awareness and the benefits accrued due to the adoption of nano urea in and around jangareddigudem area have been very minimal and need to be improved a lot in the coming future. There has been a gap of understanding among the farmers community in this region and can

be filled with the active involvement of the students and the institution's incubator and its outreach programmes.

### **Suggestions**

At this juncture focus on more spending on R&D in terms of GDP at national level and creating awareness among the masses through the Think Fresh Incubator in CSTS Govt.Kalasala at local level are highly valuable to reap the positive benefits of this wonderful technology. Since consultancy and extension have become the core modules in delivering undergraduate education, the recent Incubator approach becomes the backbone for various outreach activities of the institution. The students can interact with various farmer groups like FIG, FPO farmer interest groups and farmer producer organisations and local agricultural/horticultural/forest departments in spreading the awareness on NANO UREA and other products. Students can involve in various inventions related to agriculture needs in their vicinity.

### **References:**

39<sup>th</sup> report on fertilizers of standing committee of Lok Sabha by the Ministry of Chemicals and Fertilizers, India, 2022-23.

**[https://loksabhadocs.nic.in/lsscommittee/Chemicals%20&%20Fertilizers/17\\_Chemicals\\_And\\_Fertilizers\\_39.pdf](https://loksabhadocs.nic.in/lsscommittee/Chemicals%20&%20Fertilizers/17_Chemicals_And_Fertilizers_39.pdf)**

RBK rytu bharosa kendara, Jangareddigudem.

Growmore outlet, Jangareddigudem.

### **Annexures:**

**1.TIMES OF INDIA news paper 22-03-2023 article on nano urea**  
**<https://timesofindia.indiatimes.com/india/use-of-nano-urea-can-reduce-fertiliser-subsidy-bill-by-rs-25k-annually/articleshow/98891244.cms?from=mdr>**