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## MENU

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# Union Home Minister, inaugurates India's first liquid nano di-ammonium phosphate (DAP) plant.

## Topics Covered



- Union Home Minister, inaugurates India's first liquid nano di-ammonium phosphate (DAP) plant.
- What is the news?
- Advantages of Nano DAP:
- Importance of the New Nano DAP Facility:
- About IFFCO:
- IFFCO's Impact on Indian Agriculture:
- QuizTime:
- Mains Questions:
  - Discuss the possible advantages and disadvantages of nano DAP for India's agricultural sector.
  - Question 2:
    - Compare and contrast nano DAP fertilizers with traditional DAP fertilizers.
- How it is covered in the UPSC Syllabus:

## What is the news?

- The first liquid nano di-ammonium phosphate (DAP) facility in India was constructed by **IFFCO** at **Kalol in Gandhinagar, Gujarat**, on October 24, 2023.
- It has the potential to revolutionize how producers use fertilizers, which is a significant development for India's agricultural sector.

## What exactly is Nano DAP?



- Nano DAP is a fertilizer composed of nanoparticles that is more efficient and effective than conventional DAP fertilizers.
- Nano DAP particles are smaller and more soluble,

allowing them to be more readily assimilated by plants. This leads to increased crop yields and decreased fertilizer consumption.

***Here is a table comparing the composition of conventional DAP and nano-DAP:***





Characteristic	Conventional DAP	Nano-DAP
Particle size	50-100 microns	< 100 nanometers
Nitrogen content	18%	8-16%
Phosphorus content (P <sub>2</sub> O <sub>5</sub> )	46%	16-24%
Solubility	Soluble in water	Highly soluble in water
Nutrient use efficiency	Low	High
Environmental impact	High	Low

## ***Advantages of Nano DAP:***

Nano DAP has several advantages over conventional DAP fertilizers, including:

- Up to a 20% increase in crop harvests can be achieved with Nano DAP.

- Nano DAP is more effective than conventional DAP fertilizers, allowing producers to use less while achieving the same results.
- Nano DAP is less detrimental to the soil than traditional DAP fertilizers, resulting in improved soil health.
- Nano DAP can help reduce the environmental impact of agriculture by reducing greenhouse gas emissions and water pollution.

## ***Importance of the New Nano DAP Facility:***

- The new nano DAP facility in Kalol is an important development for the agricultural sector in India. It will reduce India's dependence on imported DAP fertilizers and make high-quality fertilizers more affordable for cultivators. The facility will also generate employment and stimulate the regional economy.

## ***About IFFCO:***



Indian Farmers Fertiliser Cooperative Limited

***• Indian Farmers Fertiliser Cooperative Organization Limited:***

- The Indian Farmers Fertiliser Cooperative Limited (IFFCO) is a multi-state cooperative that manufactures and distributes fertilizers. It is the largest fertilizer cooperative in the world and the largest cooperative society in India. IFFCO was founded in 1967 with the intention of making affordable fertilizers available to producers.

## ***Products and Services of IFFCO:***

- IFFCO manufactures and distributes an extensive variety of fertilizers, including:
  - Urea
  - DAP is diammonium phosphate.
  - Potash muriate (MOP)
  - NPK (nitrogen, phosphorus, potassium) fertilizers
  - Micronutrient plant nutrients
  - Natural fertilizers

## ***IFFCO also offers the following additional services to farmers:***

- Soil sampling
- Crop consulting services
- Agricultural loans
- Crop coverage

## ***IFFCO's Impact on Indian Agriculture:***

- IFFCO has contributed significantly to the growth of Indian agriculture. It has made affordable fertilizers available to farmers, which has increased crop yields and improved food security in India. IFFCO has also contributed to the promotion of sustainable agriculture practices by creating and promoting organic and micronutrient

fertilizers.

## ***The Global Presence of IFFCO:***

- With operations in over 30 countries, IFFCO has a global presence. It is a significant exporter of agricultural products and fertilizers. Additionally, IFFCO participates in a number of joint ventures with international corporations.



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## ***QuizTime:***

**What is the main advantage of nano DAP over traditional DAP fertilizers?**

- (a) It is more efficient and effective.
- (b) It is less harmful to the soil.
- (c) It is more affordable.
- (d) All of the above.

- Answer: (d)

**Which of the following statements about nano DAP is FALSE?**

- (a) It can help to increase crop yields by up to 20%.
- (b) It can help to reduce greenhouse gas emissions.
- (c) It can help to reduce water pollution.
- (d) It requires more water to apply than traditional DAP fertilizers.

▪ Answer: (d)

**Where is India's first liquid nano DAP plant located?**

- (a) Kalol, Gujarat
- (b) Kanpur, Uttar Pradesh
- (c) Vizag, Andhra Pradesh
- (d) Kochi, Kerala

▪ Answer: (a)

## ***Mains Questions:***



## ***Discuss the possible advantages and disadvantages of nano DAP for India's agricultural sector.***

### ***The Model Answer is:***

Nano DAP is a novel type of fertilizer that has the potential to revolutionize the manner in which India uses fertilizers. Nano DAP consists of nano-particles, which are significantly smaller than conventional fertilizer particles. This means that nano DAP is more readily and efficiently absorbed by plants, resulting in a number of potential benefits, including:

- Up to a 20% increase in crop harvests can be achieved with Nano DAP. This is because nano DAP allows plants to absorb more nutrients than traditional DAP.
- Nano DAP is more effective than conventional DAP, so producers can use less while still achieving the same results. This can save producers money and reduce agriculture's environmental impact.
- Nano DAP is less detrimental to the soil than traditional DAP, resulting in improved soil health. This is due to the fact that nanoparticles are less likely to percolate into groundwater and contaminate soil.
- Nano DAP can help reduce the environmental impact of agriculture by reducing greenhouse gas emissions and water pollution.
- Nano DAP is also more soluble than traditional DAP, making it simpler to apply and less likely to

cause fertilizer burns. Nano DAP is also more stable than conventional DAP, allowing it to be stored for extended periods of time without losing efficacy.

Nevertheless, the use of nano DAP is not devoid of potential obstacles. One difficulty is that nano DAP is more costly than conventional DAP. This may make it challenging for small-scale producers to purchase nano DAP. Insufficient research has been conducted on the long-term effects of nano DAP on plant growth and soil health. To ensure that nano DAP is safe and effective for long-term use, additional research is required.

The prospective advantages of nano DAP for India's agricultural industry outweigh the disadvantages. Nano DAP has the potential to aid farmers in increasing crop production, decreasing fertilizer costs, enhancing soil health, and reducing environmental impact. This could significantly affect India's food security and economic growth.

## ***Question 2:***

***Compare and contrast nano DAP fertilizers with traditional DAP fertilizers.***

***The Model Answer is:***

***Comparison:***



Characteristic	Nano DAP	Traditional DAP
Particle size	Nano-particles (1-100 nm)	Micron-particles (1000 nm)
Solubility	More soluble	Less soluble
Efficiency	More efficient	Less efficient
Cost	More expensive	Less expensive
Impact on soil health	Less harmful to the soil	More harmful to the soil
Environmental impact	Reduced greenhouse gas emissions and water pollution	Increased greenhouse gas emissions and water pollution

Environmental influence  
 Reduced emissions of greenhouse gases and water contamination  
 Increased emissions of greenhouse gases and water contamination

In general, nano DAP is a more effective and efficient fertilizer than conventional DAP. It is also less damaging to the soil and has less of an impact on the environment. However, nano DAP costs more than conventional DAP.

### Conclusion:

- Nano DAP is a new form of fertilizer that has the potential to revolutionize how India uses fertilizers. Nano DAP has a number of potential benefits, including increased crop yields, decreased fertilizer use, enhanced soil health, and diminished environmental impact. However, there are also potential drawbacks to the use of

nano DAP, such as its higher cost and the need for additional research on its long-term effects.

- Despite the obstacles, nano DAP has significant potential benefits for India's agricultural sector. Nano DAP could assist producers in increasing crop yields, decreasing costs, enhancing soil health, and decreasing their environmental impact. This could have a positive effect on food security and economic growth in India.

## *How it is covered in the UPSC Syllabus:*



- The inauguration of India's first liquid nano DAP plant is a significant development that UPSC aspirants should be aware of. It is likely to be asked in the UPSC exam in the following ways:

- **Prelims:** UPSC aspirants should be aware of the basic concepts of nano DAP, its benefits, and the significance of the new nano DAP plant in Kalol.  
Mains: UPSC aspirants may be asked to write an essay on the implications of nano DAP for India's agricultural sector. They may also be asked to compare and contrast nano DAP with traditional DAP fertilizers.

***The topic of nano DAP is covered in the UPSC syllabus under the following heading:***

***Agriculture and Related Issues:***

- Agricultural production and productivity, policies and programmes for development in agriculture including irrigation and watershed management; land reforms.  
Crop insurance and marketing of agricultural produce; issues and challenges confronting Indian agriculture.  
Conclusion
- The inauguration of India's first liquid nano DAP plant is a significant development for India's agricultural sector. It has the potential to revolutionize the way farmers use fertilizers and increase crop yields. UPSC aspirants should be aware of the basic concepts of nano DAP, its benefits, and the significance of the new nano DAP plant in Kalol.



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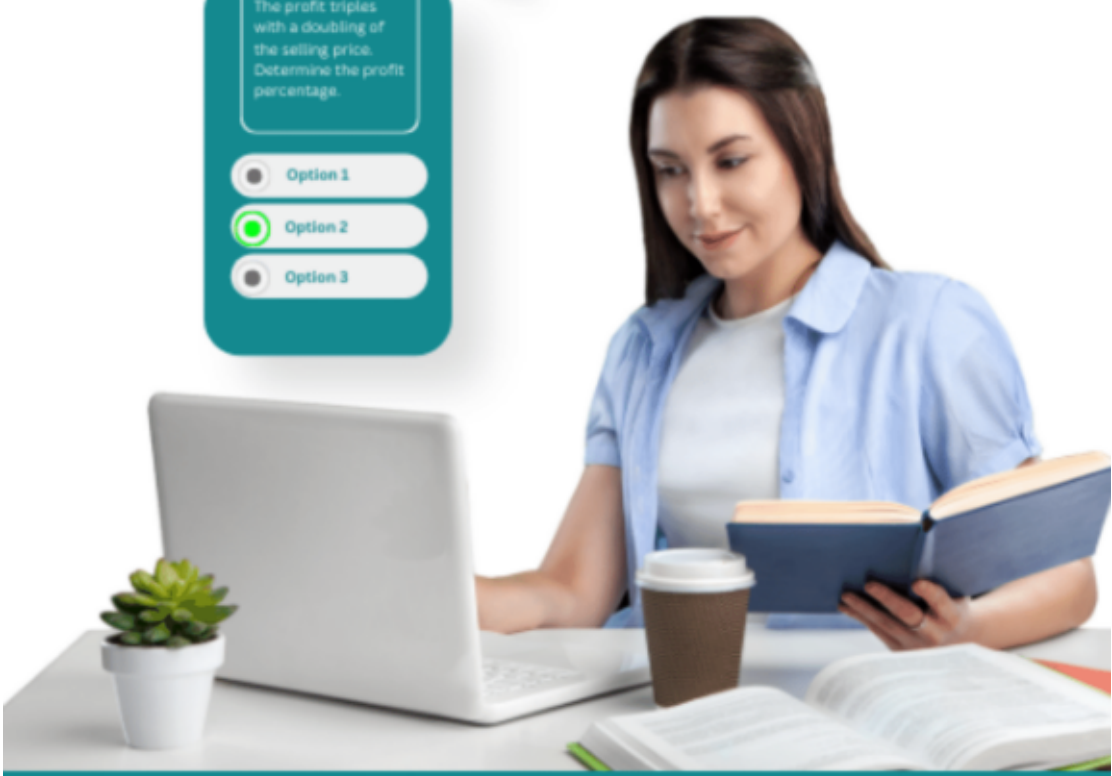
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The profit triples with a doubling of the selling price. Determine the profit percentage.

Option 1

Option 2

Option 3



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