



NANO DAP - AGRICULTURE & GS III MAINS

Q. The expansion of the application of Nano DAP on various crops in all agro climatic zones is a right and required step in the present geographical state. Discuss (10 marks, 150 words)

News: *Nano DAP to bring down fertiliser subsidy bills, says industry body*

What's in the news?

- The Southern India Chamber of Commerce and Industry (SICCI) stated that the interim Budget's initiatives to promote new-age technology products in agriculture, such as Nano Diammonium Phosphate (DAP), are expected to **reduce fertiliser subsidy expenses and enhance the agricultural economy.**

Nano DAP:

- It is a unique liquid fertilizer product that contains nanoparticles of Diammonium Phosphate (DAP).
- It is a source of nitrogen and phosphorus – 2 key primary nutrients essential for the growth of crops.
- It contains **8% Nitrogen and 16% Phosphorus by volume.**
- Unlike conventional DAP, which comes in granular form, IFFCO's Nano DAP is in liquid form.
- It has an advantage in terms of surface area to volume, as its particle size is less than 100 Nanometre (nm).



Significance of Nano DAP:

1. Sustainable Solution:

- In the agriculture sector, Nano DAP is a sustainable option for farmers towards smart agriculture and to combat climate change.

2. Efficiency:

- Nano tiny particle enables fertiliser to enter easily inside the seed surface or through stomata and other plant openings.
- Enhanced use efficiency of one bottle (500 ml) of Nano DAP can potentially replace the phosphorus requirement met by conventional DAP by 50%.

3. Better Assimilation:

- Nano clusters are functionalized with bio-polymers and other excipients which leads to higher seed vigour, more chlorophyll, and photosynthetic efficiency.



- The property of water solubility helps in targeted delivery and reduces leaching.

4. Increase in Quality:

- Nano DAP will provide much better quality, reduces input cost and increase in crop yields.

5. Precision Farming:

- Nano DAP through targeted application can help fulfill the nutritional requirement of crops without harming the environment.

6. Impact on Soil:

- It has reduced impact on soil and improve the fertility of the land, the farmers can increase the number of earthworms on the land.

7. Reduce Subsidy Burden:

- It will lead to a reduction in imports as well as the government's fertiliser subsidy bill.

8. Higher Crop Yield:

- Due to small size and more surface area to volume ratio, seed treatment and foliar application of Nano DAP at critical growth stages enhances nutrient availability to crops.
- Hence, crop yield increases due to increase in leaf chlorophyll, photosynthesis, root biomass, number of effective tillers and branches.

The various significant benefits of Nano DAP underscores the necessity for its more adoption and expansion. The expansion of the application of Nano DAP on various crops in all agro climatic zones is a right and required step, however the need to strike a balance between technological advancements and environmental sustainability is must.

