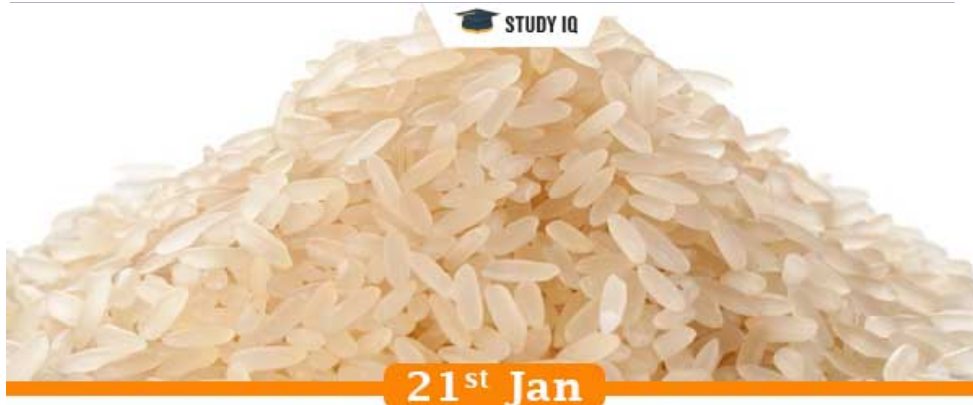


RICE ATTRIBUTES THAT IMPROVE NITROGEN USE EFFICIENCY



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Issue

A team of scientists have reported physical attributes and genes that help identify which types of rice use nitrogen efficiently.

Background

Such knowledge could help farmers use nitrogenous fertilizers efficiently, save costs, as well as limit nitrogen-linked pollution.

Details

- Researchers found that N-use-efficient (NUE) cultivars tend to be slow in germination and flowering, grow tall and deep with higher biomass and take longer duration to harvest but yield more with lesser N input. They also reported 34 genes associated with NUE for potential crop improvement.
- For the study, the scientists compared 3 high NUE and 3 low NUE cultivars of rice with normal or low dose of nitrate or urea as the sole source of nitrogen (N).
- Scientists have described on one or two visible or phenotypic features that change in a plant in response to N-fertilizer.
- The findings in rice will also be relevant to other cereals and possibly other crops, though they need to be validated.

Nitrogen pollution

- The Indian government's subsidy on N-fertilizer is over ₹ 50,000 crore per annum. The farmer pays only a quarter of the market price of urea and harvests a similar proportion of it into grain. The rest of it is lost as N-pollution.

- Agriculture accounts for over 70% of all nitrous oxide emission in the Indian environment, out of which 77% is contributed by fertilizers, mostly urea.
- Nitrous oxide is a greenhouse gas (GHG) that is 300 times more powerful than carbon dioxide.
- It has replaced methane as the second largest GHG emission from Indian agriculture over the last 15 years.
- Cereals account for over 69% of the total consumption of N fertilizers in India, with rice topping the list at 37%, followed by wheat (24%).

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