



Urea-Efficient Wheat Varieties

Why in News?

Indian and Japanese institutions are collaborating to develop India's first wheat varieties using **Biological Nitrification Inhibition (BNI) technology**, marking a significant step towards sustainable agriculture.

- **Indian Council of Agricultural Research (ICAR)-Central Soil Salinity Research Institute (CSSRI), Karnal** is involved in this project.

Key Points

- **Aim:**
 - These varieties **aim to reduce urea dependency**, addressing challenges such as **environmental sustainability, agricultural productivity, and the financial burden of urea subsidies**.
- **Collaborative Effort:**
 - The project is also a joint initiative by **Indian Institute of Wheat and Barley Research (IIWBR), Indian Agricultural Research Institute (IARI), and Borlaug Institute for South Asia (BISA)**.
 - It is carried out in collaboration with the **Japan International Research Centre for Agricultural Sciences (JIRCAS)** and funded by the **Japan International Cooperation Agency (JICA)**.
- **Transformative Potential of BNI:**
 - According to Scientists at CSSRI, **BNI technology** can **reduce nitrogen fertiliser** demand without compromising yield or quality.
 - He added that BNI supports **sustainable agriculture by minimizing nitrogen leaching into groundwater**, thereby preserving **soil fertility and water resources**.
- **Promising Results:**
 - Senior Scientist at IIWBR, reported a **15-20% reduction in urea usage in initial experiments** without affecting yield or quality.
 - The breeding strategy for developing BNI-enabled wheat varieties is progressing well.
- **Future Implications:**
 - This breakthrough collaboration between India and Japan is set to revolutionize **wheat cultivation**, reduce urea dependency, and address global agricultural challenges.

Biological Nitrification Inhibition (BNI)

- It is a **natural plant process** that can help regulate **nitrification in agricultural systems**, and improve **nitrogen-use efficiency**.
- It can help **develop sustainable agricultural systems** that are productive but least damaging to the environment.
- High levels of nitrification can lead to **NO leaching, denitrification, and greenhouse gas emissions**.

Subsidy on Urea

- In India, **urea is the most produced, imported, consumed and physically regulated fertiliser** of all. It is subsidised only for agricultural uses.
- The Centre **pays a subsidy** on urea to fertiliser manufacturers on the basis of cost of production at each plant and the units are required to sell the **fertiliser at the government-set Maximum Retail Price (MRP)**.

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