Farmer's Preferences for Rice and Wheat

***Prelims**: Economic Geography of India | Agriculture*

Why in News?

In last few decades times, both rice and wheat acreages across India was rising than other crops.

- **Reason for preferences** - The most primary reason for expansion in rice and wheat area is the government's *near-guaranteed purchases* of the 2 crops at ***minimum support prices (MSP)***.
- This kind of government backstop does not exist for other crops, discouraging their cultivation.
    - For instance, Punjab's cotton area has plunged from 3.4 lh in 2015-16 to one lh in 2024-25 and in Madhya Pradesh.
- They are being grown *largely under irrigated conditions*.
- They also receive priority with regard to ***public breeding and research support.***
    - Cotton has seen no new breeding breakthroughs after the genetically modified (GM) Bt cotton hybrids commercialised during 2002-06.
    - Recently, Indian Council of Agricultural Research (ICAR) unveiled a genetically-edited (GE) mutant line of a rice & wheat.
- Being non-lodging made them more responsive to fertiliser and water application.
- They both have ***relatively lesser yield risk*** than other crops.
    - For example, yields in most oilseeds, pulses and other field crops have been flat or registered modest increases
- The 1st generation of Green Revolution wheat varieties such as Kalyan Sona and Sonalika, released in the late-1960s, yielded an *average 3.8 tonnes of grain per hectare* under normal growing conditions in farmers' fields

YIELDS OF GREEN REVOLUTION WHEAT VARIETIES

Variety Name	Release Year	Average Yield	Potential Yield
Kalyan Sona	1969	3.76	4.6
HD-2329	1985	4.84	6.08
PBW-343	1996	4.92	6.1
HD-2967	2011	5.04	6.6
HD-3086	2014	5.43	7.11
HD-3385	2023	5.97	7.34
HD-3386	2024	6.25	7.69

Source: Indian Council of Agricultural Research

- These wheat varieties were bred for not only higher yields, but also for *resistance against rust diseases* (caused by fungal pathogens) and climate-smart traits.

*The **HD-3385 variety of wheat** released in 2023, for example, yields an average of 6 tonnes per hectare and potential of over 7.3 tonnes. It is, moreover, resistant to all major rusts – yellow (stripe), black (stem) and brown (leaf).*

Quick Facts

	Genome Edited Rice	Genome Edited Wheat
Variety	Pusa DST Rice 1	Kamala
Parent	Cottondora Sannalu (MTU-1010)	Samba Mahsuri
Edited gene	DST (drought and salt tolerance) gene, reducing its expression	Gn1a' gene - to reduce its expression
Effect	It becomes viable even under conditions of water, salinity and alkalinity stress.	It promotes cytokinin accumulation, leading to higher grain numbers.

- **Cytokinins** - They are plant hormones that help increase the number of grains per panicle.
- **DST (drought and salt tolerance) gene** - It acts as a negative regulator, inhibiting the rice plant's tolerance to abiotic stresses such as heat and salinity.

Reference

The Indian Express| Preference for Rice and Wheat Cropping in India