

## **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 <u>near-guaranteed purchases</u> of the 2 crops at <u>minimum</u> <u>support prices (MSP)</u>.
- This kind of government backstop does not exist for other crops, discouraging their cultivation.
  - $\circ\,$  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.
  - $\circ\,$  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.
  - $\circ\,$  For example, yields in most oilseeds, pulses and other field crops have been flat or registered modest increases
- The 1<sup>st</sup> generation of Green Revolution wheat varieties such as Kalyan Sona and Sonalika, released in the late-1960s, yielded an <u>average 3.8 tonnes of grain per</u> <u>hectare</u> 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 o	Agricultur	al Research	

• These wheat varieties were bred for not only higher yields, but also for *resistance* <u>against rust diseases</u> (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	DST (drought and salt tolerance) gene,	<u>Gn1a' gene -</u> to reduce its
gene	reducing its expression	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

