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National gene bank discovery to help develop wheat varieties

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New Delhi, Nov 28: The National Bureau of Plant Genetic Resources (NBPGR), commonly known as the national gene bank, has identified around 45 accessions (a unique identifier given to a protein sequence) out of its collection of 20,000 accessions which have been found to be resilient to heat during grain formation period.

This identification of traits of genes would help agricultural scientists developing new wheat varieties which can deal with fluctuations in temperature commonly witnessed in the north of India since the last few years.

Agricultural scientists associated with the characterisation drive say that the purpose is to help provide large genetic variability which helps in quality seed

development. These wheat accessions or germplasms, identified in the last three years, will soon be put into the national varietal development programme for creating new varieties of seeds for farmers. It takes about 5-10 years after the identification of genes to develop a new variety.

"Identified genes will play a crucial role in development of next generation wheat

seed varieties which would withstand adverse impact of higher temperature being witnessed in the last few years in key growing areas," KC Bansal, director, NBPGR, told FE.

According to him, the national gene bank, located in the heart of the Capital, has also identified around 50 wheat accessions which have the capacity to deal with various rust attacks com-

monly seen in the crop in northern India.

"We have been dealing with the issue of yellow and steam rust in wheat crop for the last few years and the new varietal development programme would get support from genes resources identified by the national gene bank," said a senior scientist with the Directorate of Wheat Research (DWR), premier research institute based

in Karnal, Haryana.

The gene bank had launched the research programme on 'acquisition, evaluation and identification of climate resilient wheat and rice genetic resources for tolerance to heat, drought, and salt stresses' under the agriculture ministry's 'National Initiative on Climate Resilient Agriculture' started three years ago.

The gene bank has priori-

tised 15 categories, including rice, wheat, maize, pearl millet, finger millet, chickpea, mustard, okra, brinjal and mango, for gene preservation initiatives.

At present, according to regulations, the germplasm held with the gene bank is only shared with state-owned research institutes.

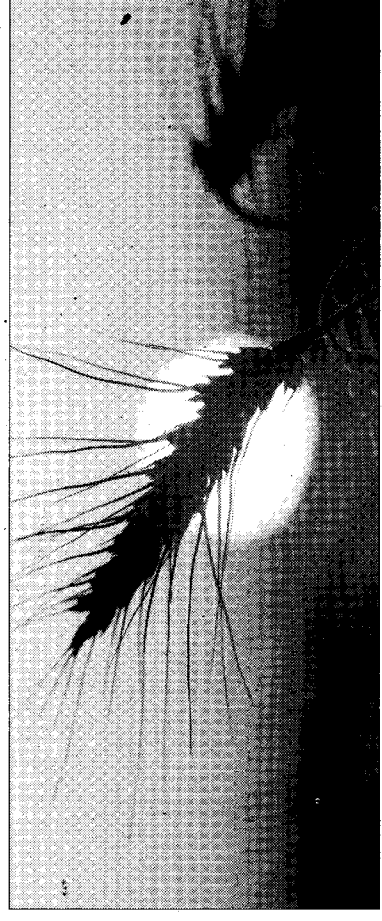
Out of the total collection of germplasm at NBPGR, about 90,000 will be rice varieties.

Others include wheat (20,000), vegetables (24,000), total oilseeds (55,000) and pulses (50,000). Threats to these crops are kept in a genebank in the form of seeds.

The NBPGR has collected genes of around 1,500 crop species, including ornamental, oilseeds and medicinal. But the majority of them, which are critical to food and nutritional security, will be around 15-20.

According to the agriculture ministry's data, the country's wheat production has increased from 72.7 million tonne in 2001-2 to 95.9 million tonne in 2013-14.

However, in the last few years, because of wide fluctuation in temperature and appearance of yellow rust in northern India, agricultural scientists have expressed concern about sustaining wheat production in the long run.



EUREKA!

- Discovery of around 45 accessions (a unique identifier given to a protein sequence) would help scientists develop varieties which can deal with fluctuations in temperature
- It takes about 5-10 years after the identification of genes to develop a new variety
- The bank has also identified around 50 wheat accessions which have the capacity to deal with rust attacks
- The national gene bank has prioritised 15 categories, including rice, wheat, maize, pearl millet, finger millet, chickpea, mustard, okra, brinjal and mango, for gene preservation initiatives

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