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## Reviving Cotton in Pakistan: Climate-Resilient Genotypes for a Water-Scarce Future



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Multan, August 5 – Cotton, often called “white gold,” is vital to Pakistan’s economy. It contributes 0.6 percent to the national GDP and drives more than 60 percent of export earnings through the textile industry. However, the country’s cotton production has sharply declined from 10 million to nearly 5 million bales in recent years. This drop is mainly due to drought, unpredictable rainfall,

outdated farming methods, pest attacks, and climate change.

To tackle this challenge, a doctoral research project by Muhammad Kashif Shahzad Sarwar under the supervision of Dr. Ummara Waheed at the Institute of Plant Breeding and Biotechnology, MNS University of Agriculture Multan focused on developing climate resilient cotton varieties that can survive under water scarcity.

From 2018 to 2020, over 200 upland cotton genotypes were evaluated under both normal and limited water conditions. Among them, 63 showed strong performance in terms of yield and fiber quality. Further testing led to the selection of 10 standout genotypes, including NIAB 878, FH 326, FH 416, CIM 602, RH 668, and VH 327, which consistently performed well under stress.

These genotypes were then used to create 25 hybrid crosses. Two of these crosses delivered the best results, showing great potential for cultivation in dry and water limited areas. These improved cotton types offer a practical solution for sustaining cotton production in a changing climate.

This research supports climate smart agriculture, reduces dependence on cotton imports, improves farmer incomes, and strengthens Pakistan's textile industry, which is one of the largest employment sectors in the country.

As climate conditions worsen and water becomes scarcer, adopting these resilient cotton cultivars is essential. They not only help maintain production but also offer long term economic and

environmental benefits for Pakistan's agriculture and textile sectors.