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Ug99 (TTKSK) Detected in Egypt

The global rust monitoring system was established as part of the BGRI in order to track the spread of virulent rust pathogens, notably the Ug99 race group of stem rust. Egypt has now demonstrated the successful implementation and functionality of this monitoring system, with the confirmed detection of race TTKSK (Ug99) in samples collected in Egypt in 2014. This detection was only possible through the diligence of Egyptian scientists and close collaboration with international rust laboratories.

The unusual appearance of stem rust was first detected by Egyptian scientists on late maturing trials at three research stations in the Delta region in 2014. No occurrence of stem rust was reported from farmer fields and no losses were incurred. Two independent international rust laboratories -- the Global Rust Reference Center, Denmark and the USDA-ARS Cereals Disease Lab, Minnesota, USA -- analyzed collected samples. Repeated assays on seedlings in the greenhouse, and the use of a DNA SNP-based assay, confirmed the presence of three local stem rust races (TKTTF, TKKTF, TCMLC) and Ug99 (TTKSK). Independent confirmation of race Ug99 was obtained by both laboratories. This result makes Egypt the 13th country in which one of the Ug99 races has been detected.

This continued geographical expansion of the Ug99 race group is no surprise, but rather an expected outcome given the rapid colonization by Ug99 of every other wheat growing country on the eastern side of Africa. The Egyptian wheat program is exemplary of preparedness for the Ug99 threat, being the first country to release cultivars resistant to Ug99 (i.e., Misr1 and Misr2). Egypt has also been a leader in helping other countries prepare for the possible incursion of Ug99 races e.g., sending 150 tons of seed of the resistant cultivar Misr1 to Afghanistan. In addition Egyptian wheat cultivars and breeding materials have been routinely tested in Kenya to develop information on resistance and select new resistant varieties. Various Egyptian scientists have obtained training on Ug99 stem rust through participation in courses at Kenya.

Detection of Ug99 race in an important wheat producing country such as Egypt is obviously significant, both for the country itself and also for neighboring countries in the region. However, detection does not imply that any major epidemic will occur. Egyptian authorities are monitoring very closely the rust situation in the current season. With a few weeks left until the start of harvesting, only trace levels of stem rust have been detected in March 2015 at one research station in the central Delta. Yellow rust is present at scattered locations, but at low levels. The development of both rusts is being monitored and plans are in place for fungicide control if needed. Given the levels of rust present in Egypt and the limited time before the commencement of harvest, it is considered unlikely that any significant losses will occur.

Kenyan Variety Robin Overcome by Two New Ug99 Variants

A popular wheat cultivar, Robin, sustained severe damage in some farmers' fields by stem rust in the 2014 crop season in Kenya. Robin became popular because of high yield potential and resistance to previously known Ug99 races. The resistance was conferred by stem rust gene *SrTmp*, which was effective to the previous races of the Ug99 race group. KALRO scientists collected several samples from various field

sites, including the stem rust resistance screening nurseries at Njoro, and race analyses conducted by CDL and GRRC identified two new variants in the Ug99 race group, both of which were virulent to *SrTmp*. One of the two new variants was also detected in the 2014 samples from neighboring countries. The detection of these new races is a result of worldwide efforts in recent years on stem rust surveillance to detect and monitor Ug99 and other significant races that pose a continuous threat to wheat production. During the past years KALRO has released several stem rust resistant wheat varieties and others are at advanced stages of testing in national variety registration trials. Varieties such as 'Kingbird', 'Kenya Tai', 'Eagle 10', 'Kenya Sunbird' and 'Kenya Hawk 10' continue to be resistant to the new *SrTmp* virulent variants.

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