

Introduction

Puccinia striiformis Westend is an obligate parasite has the capabilities to infect wheat and barley, causing yellow (stripe) rust, which is extremely a very dangerous disease. Several formae speciales of the rust fungus *P. striiformis*, including *P. striiformis* f. sp. *tritici* (*Pst*) and *P. striiformis* f. sp. *hordei* (*Psh*), are classified based on host specialization. In 1920, *P. striiformis* f. sp. *tritici* (*Pst*), which causes wheat stripe rust, was discovered for the first time in Egypt. Recently, the majority of wheat and barley varieties at Sakha Agricultural Research Station's hot spot of Smart Agriculture Clinic Project plots area showed symptoms of yellow rust caused by *Puccinia striiformis* f. sp. *tritici* during the 2022 growing season (Fig 1). The objective of this study was to identify of pathotype of the stripe rust pathogen on wheat and barley in Egypt during 2022 season to provide useful information for breeding resistant cultivars and managing the disease.

Materials and Methods

The present investigation was performed under both greenhouse and field conditions of the Department of Wheat Disease Research, at the Giza Agriculture Research Station, Plant Pathology Research Institute (PPRI), Agricultural Research Center (ARC), Egypt. To identify races of *Pst* collections samples using the standard World/European group of wheat differential hosts adopted by Johnson *et al.*, (1972). Also, the definition of pathogen pathotype of *Pst* will be used the molecular biology method with pathotype of *Puccinia striiformis* on wheat and barley.

Results and Discussion

The collected samples from barely leaves were virulent on wheat differential cultivar; Chinese 166 on seedling under greenhouse condition. These suggest that a novel race of *Puccinia striiformis* f. sp. *tritici* exists that is virulent to *Yr1*, *Yr17*, *Yr24*, *Yr26*, *Yr27* and *Yr32*

Pathogenic variabilities: race analysis

- *Yr9* 1990.
- *Yr27* aggressive race since 2010.
- *Yr32* race 2014.
- Warrior race since 2015 (Shahin, 2020).
- A new variant of *Puccinia striiformis* f. sp. *tritici* the cause of stripe rust on wheat and barley in Egypt, 2022.
- *Yr10* race 2022.

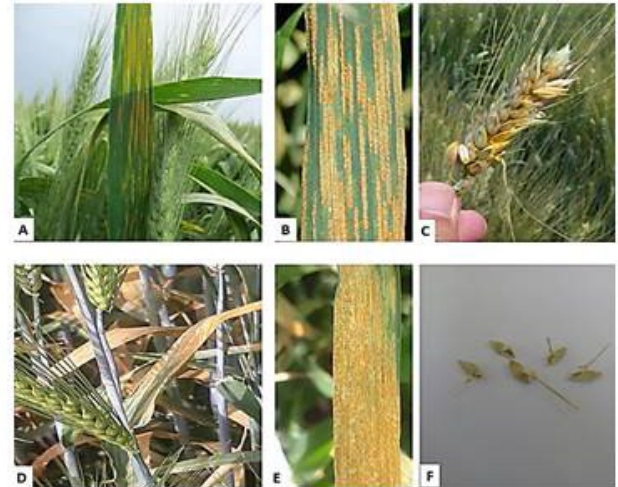


Fig. 1. Symptoms of stripe rust of wheat (A, B and C) and barely (D, E and F).

The urediniospores and teliospores on wheat (Fig. 3A and B) and barley (Fig. 3 C and D) were found to be comparable in shape and size upon light microscopic examination.

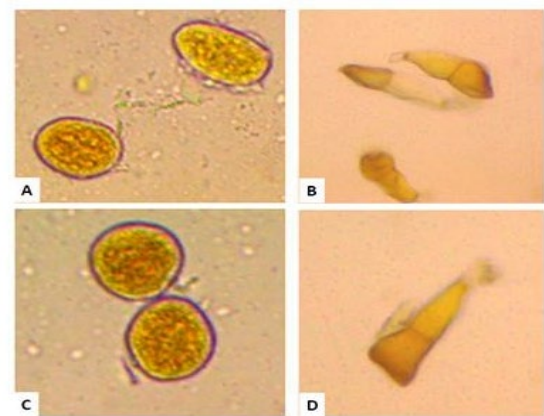


Fig. 2. Urediniospores and teliospores of wheat (A and B) and barely (C and D), 400x.

Selected Reference

Shahin, A.A. (2020). Occurrence of new races and virulence changes of the wheat stripe rust pathogen (*Pst*) in Egypt, Archives of Phytopathology and Plant Protection, Vol. 53, No. 11-12, 552-569.