

Wheat stripe (yellow) rust *Puccinia striiformis* f. sp. *tritici* (Pst)

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Reminds us of the words of Nobel Prize winner, Norman Borlaug that " **Rusts never sleep** "
So, also all who are interested in working in wheat production " **Can 't sleep quietly** "

Introduction :

Stripe (yellow) rust, caused by *Puccinia striiformis* f. sp. *tritici*, has been considered an important foliar disease of wheat (*Triticum aestivum* L.). Yellow rust causing a serious economic loss in the highly susceptible wheat cultivars, where yield losses were reached to up 70%. The UN Food and Agriculture Organization (FAO) estimates that 31 countries in East and North Africa, the Near East, Central and South Asia, accounting for more than 37 percent of global wheat production area and 30% of production, are at risk of wheat rust diseases including Yr27-virulent and Warrior races of yellow rust.

Stripe Rust (Syn. Yellow Rust) :

Stripe (yellow) rust, caused by *Puccinia striiformis* f. sp. *tritici*. This is a cool temperature disease. It develop well under moist conditions with night temperatures between 10 and 15°C. It has been considered to be a macrocyclic rust, based on

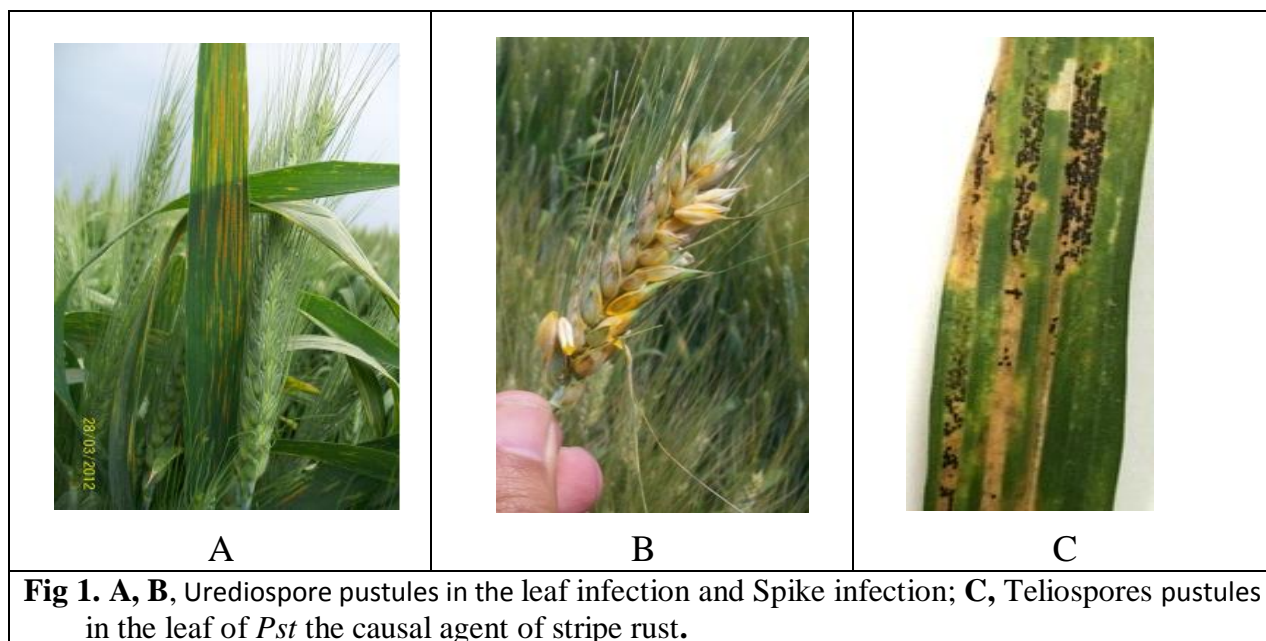
similarities with other wheat rust fungi, after the identification of *Berberis* spp. as an alternative host and elucidation of the complete life history of this rust pathogen for the first time by Jin et al., (2010).

Host Range :

Primarily a disease of wheat (*Triticum* sp.) and a few *Hordeum vulgare* cultivars worldwide. In Europe and South America a separate formae specialis attacks barley.

Symptoms :

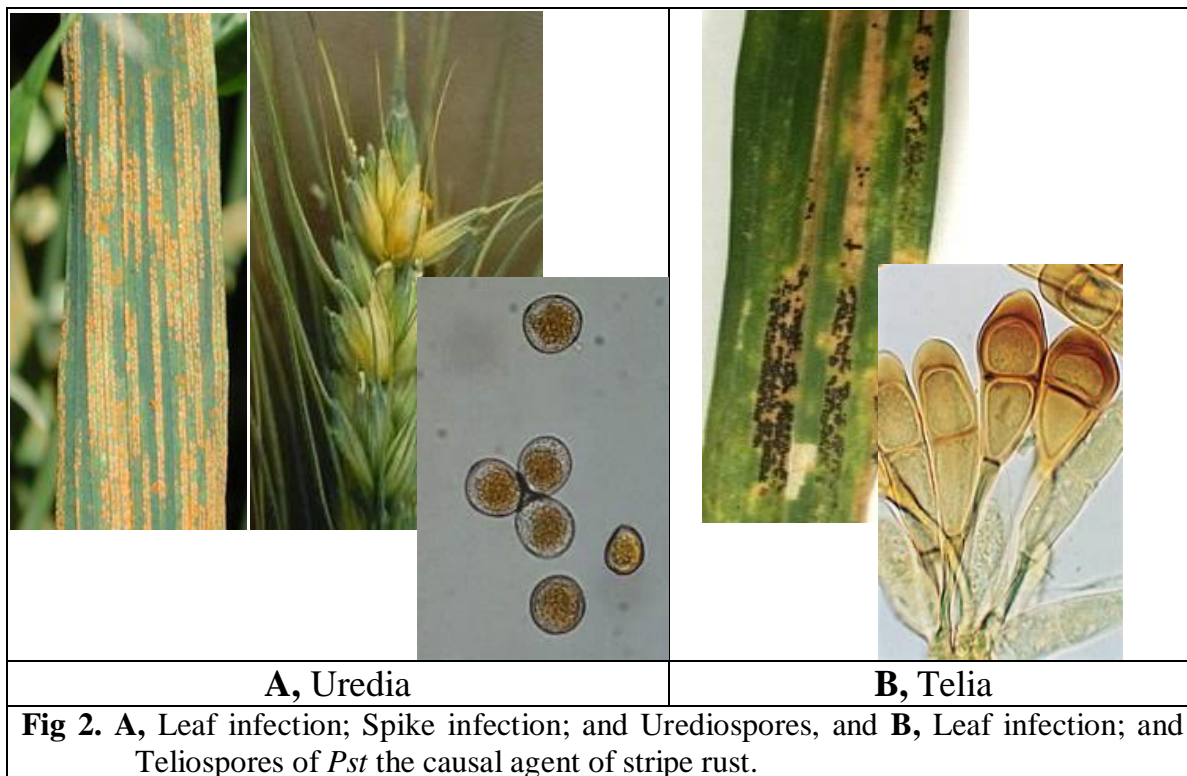
Yellow rust disease appears as small bright yellow stripes. A single infection can result in a stripe the length of the leaf, the small yellowish uredinia appear in linear rows on the leaf, each with a series of minute lined up pustules along the leaf blade. The symptoms appear on leaves and spikes. Uredinia also can occur in the spike. Telial sori develop on leaf blades and sheaths as dark brown to black stripes that remain covered by the epidermis. Stunting of plants is common with severe early infections (Fig. 1).



Spore morphology :

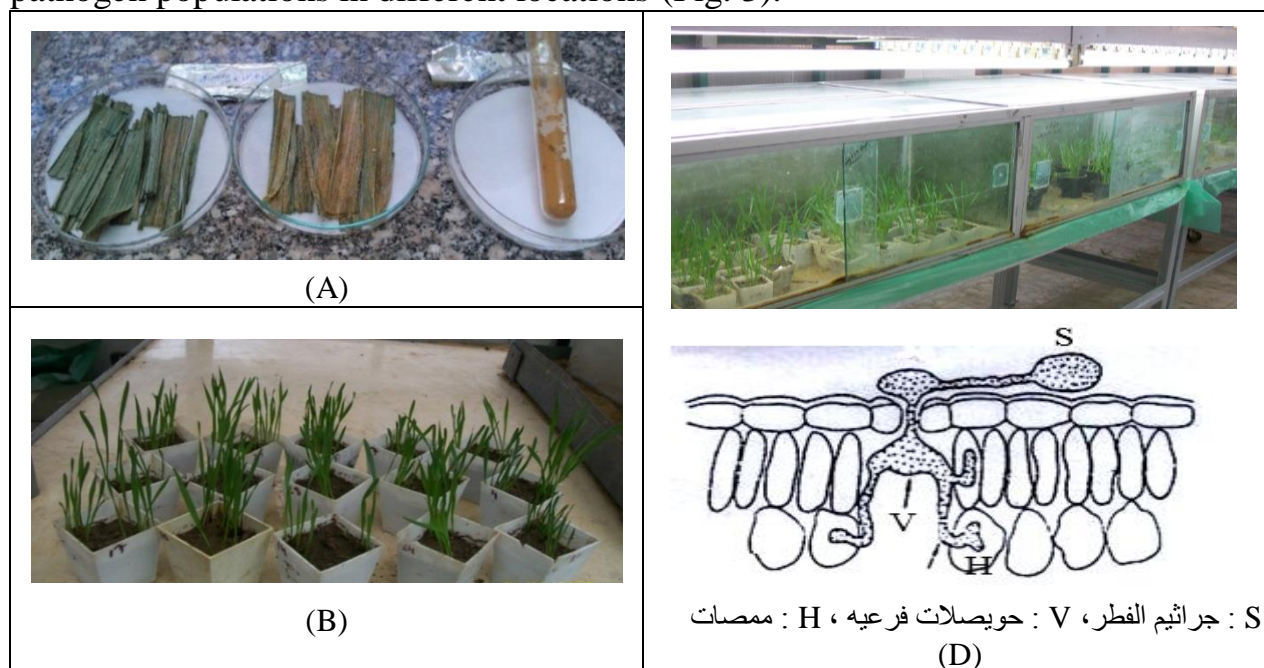
Urediospores are yellow to orange in color, more or less spherical, and measure 20 – 30 μm in diameter.

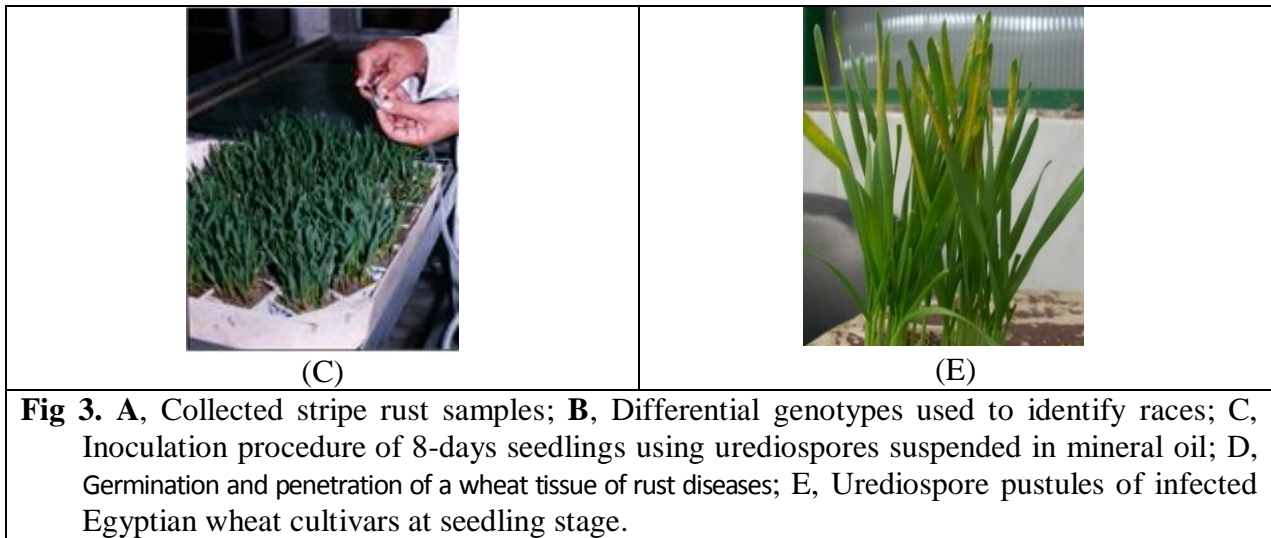
The teliospores are dark brown to black, and are two celled with thick walls. They are similar in size and shape to those of *P. recondita*, except that the cap or crown is flattened, not rounded (Fig. 2).



Race identification of stripe rust pathogen (*Pst*) :

Identification of stripe rust physiologic races was achieved using both world and European group of wheat differential varieties, following the same procedures mentioned before, were used according to the method of Johnson *et al.*, (1972). The main objectives of race identification were: determine frequency *P. striiformis* races, estimate and measure the diversity and virulence dynamics between wheat stripe rust pathogen populations in different locations (Fig. 3).





Control :

1. The use of resistant cultivars.
2. Control of volunteer wheat and seeding dates.
3. Monitor crops and trap nurseries so that early decision can be made on whether fungicide sprays would be beneficial.
3. The use of fungicide sprays.

Selected References :

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