

Synonyms

- Stem rust of cereals

Plant hosts

Avena sativa (oats), *Dactylis glomerata* (orchard grass), *Festuca arundinacea* (reed fescue), *Hordeum vulgare* (barley), *Lolium perenne* (perennial ryegrass), *Phleum pratense* (timothy), *Poa pratensis* (smooth-stalked meadowgrass), *Secale cereale* (rye), *Triticum aestivum* (wheat), *Triticum turgidum* (durum wheat), and other grasses are all susceptible to black stem rust.

Barberis spp. (barberry), *Mahonia* (Oregon grape), and *Mahoberberis* are also susceptible to black stem rust.

Symptoms

The pathogen produces symptoms on both of the different host groups. On grasses, elongate pustules develop on leaves, stems, and leaf sheaths. The pustules burst, releasing reddish spore masses called urediospores. Later in the season, pustules become black as they produce black spores called teliospores. Infected plants are smaller and produce fewer tillers than healthy plants. In addition, fewer seed heads develop and kernels can be small, shriveled, and unmarketable. When plants are infected as seedlings, they become more susceptible to winter damage and attack by other pathogens.

On the alternate hosts, yellow to orange lesions develop on leaves and sometimes on young twigs or fruit. From these lesions, bright yellow horn-like projections (aecia) grow and erupt releasing golden spores (aeciospores), which will infect nearby grasses.



Black stem rust on wheat.

Photo courtesy of Y. Jin.

Transmission

The pathogen overwinters as teliospores on infested wheat stubble and debris. Teliospores germinate producing basidiospores, which can infect any nearby barberry or other alternate hosts. The alternate hosts will serve as a reservoir for the pathogen to infect nearby wheat. Rust spores are mainly moved long distances with the wind, even entering jet streams to move across continents.