

Wheat stem rust, exotic races and strains

What is wheat stem rust?

Wheat stem rust is a fungal disease caused by the pathogen *Puccinia graminis* f.sp. *tritici* which can infect and damage wheat and other cereals crops including barley.

A number of races and strains (known as pathotypes) of wheat stem rust are already present in Australia and wheat varieties that are resistant to them have been bred to limit crop losses. There are, however, other pathotypes continually evolving overseas that would pose a huge threat to Australian grain production, should they make it through border controls.

Pathotypes of current concern include the Ug99 race complex, the Digalu race and various US races and strains. These are exotic pathotypes that we need to keep out of Australia, or to identify them quickly should they make it through border controls.

As an example of the magnitude of the damage that exotic pathotypes could cause should they make it into Australia, it has been predicted by ABARES that an incursion of one overseas type, Ug99, would cost Australia around \$1.4 billion over 10 years.

What does it look like?

Exotic pathotypes of wheat rust produce exactly the same stem rust symptoms as other types. The first symptoms are elliptical blisters on the stems and leaves of the plant running parallel to the long axis of the leaf or stem. These blisters break open after a couple of days to reveal a mass of rust coloured spores.

What should I look for?

Wheat stem rust symptoms in any variety thought to be resistant should be reported immediately.

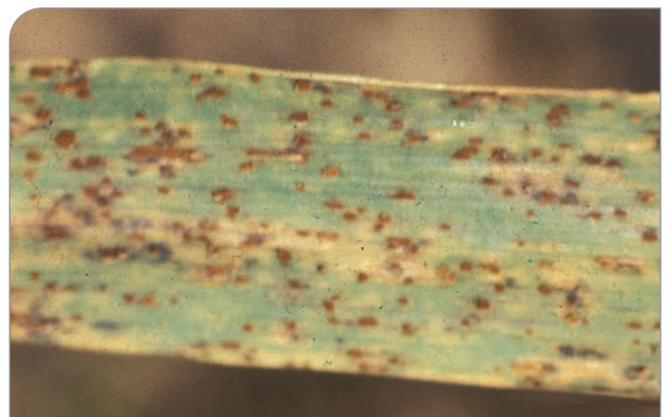
How does it spread?

Rust spores are small, light and can survive for several days away from a host. They can be spread over large distances by wind and easily attach to clothing, machinery and equipment allowing movement and spread between farms and regions. They can also transfer across the world on travellers' clothing.



Spore pustule masses can develop on the leaf surface

R.L. Croissant, Bugwood.org



Spore pustules present on the leaf surface

University of Georgia Plant Pathology Archive, Bugwood.org



Wheat stem rust spores can build up to large levels under ideal conditions

University of Georgia Plant Pathology Archive, Bugwood.org

Where is it now?

Ug99

First identified in Uganda in 1999, Ug99 spread to eight other African and Middle Eastern countries by 2014. New strains of Ug99 with increased virulence have also evolved since 2006.

The Digalu race

This pathotype of wheat stem rust has been known to occur in Turkey since 2005. It has since been confirmed in eight other countries including Georgia and Azerbaijan.

Other exotic pathotypes

Closely related genetic variants of the Digalu races have been reported in Germany and Denmark.

Other new races of wheat stem rust have also evolved in the US.

How can I protect my farm from wheat stem rust?

Early detection is crucial in stopping or slowing progress of a new pest. Monitor your crops regularly and report any stem rust symptoms occurring on currently resistant varieties without delay.

It is essential to minimise the potential impact of new pathotypes, before they have the opportunity to become widely established, or to evolve into more virulent forms.

People travelling from overseas can pose a threat, particularly if they have visited crops or farms. Check where visitors have been and ensure they don't bring rust spores with them.

If you see anything unusual, call the **Exotic Plant Pest Hotline** on **1800 084 881**.



Wheat stem rust spores present on cereal stem

Cesar Calderon, USDA APHIS PPQ, Bugwood.org



Stem rust spores visible on wheat head

Ida Paul, Small Grain Institute, Bugwood.org

GRAINS FARM BIOSECURITY PROGRAM

An initiative of Plant Health Australia and Grain Producers Australia



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