

Wheat Rust: THE BACK

POCKET GUIDE

GRDC

Grains
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Using this Guide



This back pocket guide is designed to help you identify the three wheat rust diseases by their different symptoms. Simply hold a suspect leaf next to the photos to identify which rust.

For further aid with identification: send a sample of the infected plant (express post and wrapped in paper not plastic) to the:
Australian Cereal Rust Control Program,
PBI, Cobbitty, Private Bag 11, Camden, NSW, 2570.

Wheat Stem Rust



Stem Rust

At first you will see the odd red/brown pustule, most likely on a leaf. The best clue to stem rust is that the pustules protrude through both sides of the leaf.

The pustules are large and full of dark reddish/brown powdery spores, which will extend to stems, both sides of leaves, leaf sheaths or heads. The pustules are oval or elongated. Surrounding leaf or stem surfaces are often ruptured. As infected plants dry off, the pustules may blacken due to the production of non-infectious resting spores.

Stem and leaf rusts are often hard to tell apart. Leaf rust pustules are lighter brown to orange, small, circular to oval and mostly develop only on the upper surfaces of leaves and less frequently on leaf sheaths.

Wheat stem rust also attacks barley, and some triticale varieties.

On rare occasions it can cause complete crop loss by the end of the season and threaten neighbouring crops.

Warm (above 18°C), humid conditions favour stem rust.

Control:

- Sow resistant varieties;
- Control summer/autumn volunteers through tillage, grazing or spraying herbicides;
- Foliar fungicide sprays can be used if applied early but may not be economic. Seek local advice.

Wheat Leaf Rust



Leaf Rust

A warm autumn may promote leaf rust on crops sown at that time. At first you will see small, circular to oval pustules, restricted to the upper surfaces of leaves, which produce a mass of light brown to orange spores. Check the oldest green leaves for early detection.

As the plant matures, the disease may spread to the leaf sheaths. The pustules as with the other rusts darken and eventually produce black spores as the leaves dry out.

Moist/humid conditions with temperatures between 15–22°C promote the disease.

Leaf rust looks similar on wheat, barley, rye and oats but all these are caused by different species of the rust fungus. Like the other wheat rusts, leaf rust requires green host plants to remain viable and can't live on dead stubble, in soil or on seed. Infected autumn crops can allow the build-up of spores early in the season, which then spread to later-sown crops.

Control:

- Sow resistant varieties;
- Some seed treatments control leaf rust for 8–12 weeks after sowing, but be aware of with-holding periods if the crop is intended for early grazing;
- Foliar sprays may suppress the disease in infected crops for three to five weeks depending on fungicide, rate and local conditions. Timing of application is critical to optimise returns.

Wheat Stripe Rust



Stripe Rust pustules on a mature wheat leaf.



Stripe Rust pustules on a young wheat leaf that demonstrates the difference in this symptom to the stripes seen on mature leaves above.



Stripe Rust 'hotspot'.

Stripe Rust

The first indication of stripe rust is likely to be yellow patches, or 'hotspots', in paddocks, usually 1–10 metres in diameter in winter or early spring

Close inspection will show yellow/orange pustules full of powdery spores on leaves, which form a yellow smear on your finger when rubbed. The pustules are scattered on seedlings but, on older plants, they form stripes along the leaf veins — hence the common name stripe rust.

Heads can also become infected in severe cases.

Stripe rust attacks wheat mainly but barley grass is also very susceptible. Most resistant varieties are susceptible as seedlings.

The fungus requires green host plants to survive and won't survive on stubble, in soil or on seed. Over-summering wheat volunteers or overlapping crops of susceptible varieties can multiply rust spores, creating opportunities for early season infection, which may lead to epidemic development and crop losses.

Humid/moist conditions with moderate temperatures of 8–15°C favour infection.

Variety response to stripe rust will depend on the pathotype present in the field, and the resistance/s present in the particular variety. Consult local sowing guides for current information on expected variety response.

Control:

- Sow resistant varieties;
- Control summer/autumn volunteers through tillage, grazing or spraying;
- Some seed treatments protect young crops for 8–12 weeks but beware of potential problems with emergence. Use good quality seed to minimise potential difficulties and be aware of with-holding periods required before stock can be safely introduced for grazing;
- Fungicide sprays are effective three to five weeks depending on the fungicide, rate and local conditions but are unlikely to be economic after flowering.

Rules of thumb for identifying Wheat Rusts

- Examine suspect stems and leaves early in the morning. Rub your finger over the discoloured part of the plant and if the red, orange/brown or yellow colour (that is, the spores) rubs off on your hand, it is likely to be rust. This technique reduces the chance of confusing rust with other leaf diseases or nutrient deficiencies.

The black spores at the end of the rust disease cycle do not rub off and play no part in epidemic development.

- As soon as you identify any rust infection at all, you should consider consulting your local agronomist or adviser, and, if the infection is the first in a region, then also contact the Australian Cereal Rust Control Program. Even light infections, if they are allowed to remain and build up, may pose a problem to future crops. Also, to be effective, spraying must be done early.

Growers should be aware, however, that spraying is less likely to stop the spread of a stem rust epidemic.

The Green Bridge

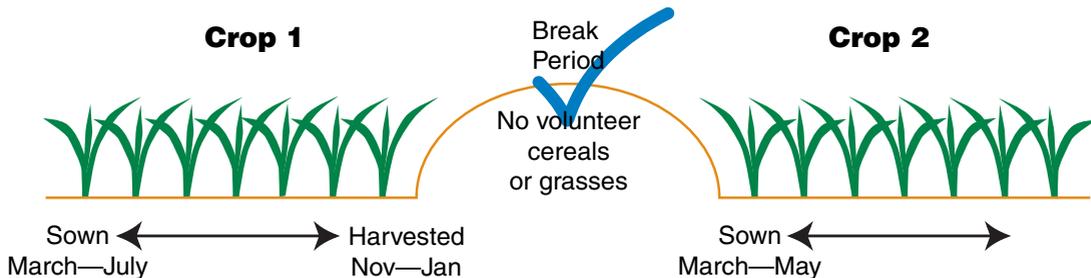
All cereal rust fungi require green host plants to survive but won't remain viable on dead stubble.

Efforts should be taken to minimise the amount of rust inoculum generated because rust is an airborne pathogen, and can threaten neighbouring crops.

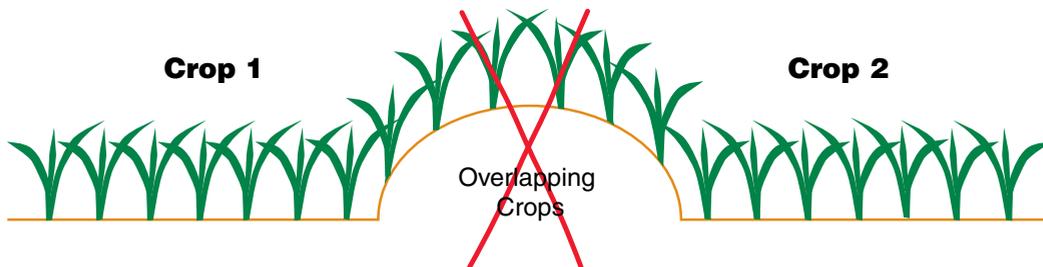
Over-summering wheat volunteers or overlapping crops of susceptible varieties can multiply rust spores, leading to early infection in emerging crops and, given suitable seasonal conditions, significant loss of yield. Highly susceptible varieties are particularly at risk and, in the worst case, can lead to the development of a rust epidemic across large areas.

How Rust infections can 'bridge' two cropping seasons*

DO



DON'T



*Moist conditions are essential for germination and infection by rust spores.
Germination takes 12—24 hours.

Further information:

Latest disease reactions of wheat varieties are detailed in *Winter Crops Variety Sowing Guide's*, issued annually by your relevant state's Department of Primary Industries.

The booklet *Stripe rust: Understanding the disease in wheat*, is available from *Ground Cover Direct* on 1800 11 00 44 or email: ground-cover-direct@canprint.com.au or from NSW DPI.

Contacts: Dr Colin Wellings, Cobbitty (02 9351 8826), Dr Gordon Murray, Wagga Wagga (02 6938 1879), Dr Steven Simpfendorfer, Tamworth (02 6763 1261)

For further information on how to manage your crop disease problems, contact your local agronomist or farm adviser.

South Australia:

Hugh Wallwork
Field Crops
Pathology Unit
Ph: 08 8303 9382



Victoria:

Contact your local
Department of
Primary Industries
agronomist



New South Wales:

Contract your local
NSW Agriculture
agronomist



Queensland:

Contact your local
Dept of Primary Industries
extension agronomist or
the DPI Call Centre 13 25 23



Western Australia:

AGWEST Plant Laboratories,
Department of Agriculture,
Western Australia
Locked Bag No.4
Bentley Delivery Centre, 6983
ENQUIRIES: 08 9368 3721
FAX: 08 9474 2658



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CONTACT

If you are unsure or have any suspicion of the presence of disease then please contact your state specialist pathologist:

Dr Hugh Wallwork,
SARDI, Adelaide, (08) 8303 9382
Email: wallwork.hugh@saugov.sa.gov.au

Grant Hollaway,
VIDA, Horsham, (03) 5362 2111
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