

# Wheat & Barley

## Leaf Symptoms: THE BACK

POCKET GUIDE

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# Using this Guide



This guide will help you identify the causes of some of the more common and important leaf damage symptoms in wheat and barley. Leaf damage can be caused by a range of diseases, herbicides and a number of nutrient and environmental stresses. Symptoms are grouped into general visual categories making it easier to key out the possible cause of the problem.

**Leaf rust**



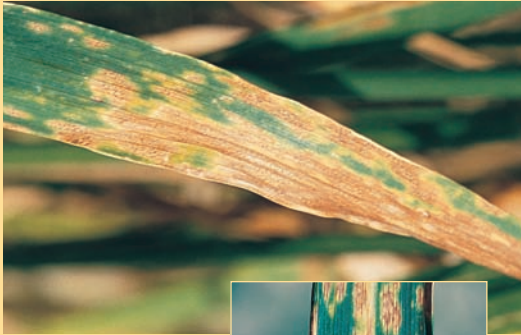
**Mildew**

## Surface spores

*Rusts, mildew, flag smut*

Some fungi produce large numbers of spores on the surface of leaves, which are dispersed by wind. These spores can, unless old or washed off by rain, be rubbed off with a finger. Stripe rust produces yellow-orange spores, whereas leaf rust and stem rust produce light brown and darker brown spores respectively. Leaf rust only produces small pustules on the upper surfaces of leaves whereas stem rust produces larger pustules that tear through both leaf surfaces and also occur on stems and heads. Flag smut produces long stripes of black spores.

*Septoria tritici blotch*

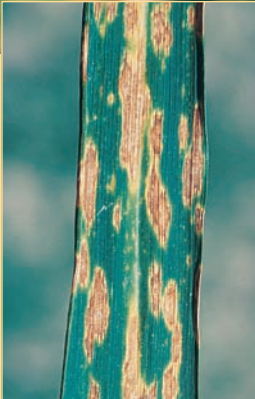


## Blotches with yellow margins – wheat

*Septoria tritici blotch, septoria nodorum blotch, yellow spot, Wirrega blotch*

Septoria tritici blotch is distinguished by having black specks (fruiting bodies) in the lesions.

Septoria nodorum blotch and yellow spot are hard to distinguish from each other but the former also leads to a browning of glumes and nodes. Wirrega blotch usually has a tear in the leaf at the site of infection.



*Yellow spot*

*Net form of net blotch*



*Spot form of net blotch*



## **Blotches with yellow margins – barley**

*Net form of net blotch, spot form of net blotch, spot blotch, Wirrega blotch*

The net blotches and spot blotch start as dark spots and form yellow margins as they enlarge. The net form of net blotch is distinguishable by net-like blotches which, when severe, extend along the leaf blade. Spot blotch is very similar to the spot form of net blotch but is only found in humid climates as in central Queensland. Wirrega blotch has a lighter coloured centre and usually has a tear at the site of infection.

**Scald**



**Ringspot**



## **Blotches – with dark margins**

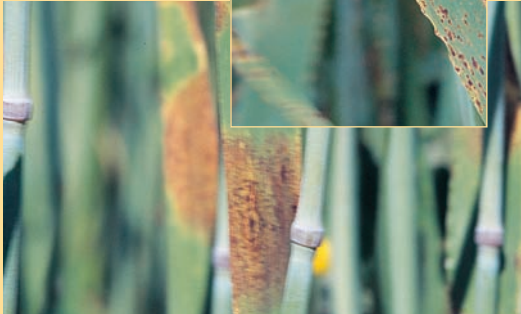
*Scald, halo spot, ring spot, herbicides*

Scald starts as a bluish water-soaked lesion but forms a dark brown margin as it ages. Scald blotches often also have yellow margins. Halo and ring spot are small lesions that cause little damage. Halo spot mostly occurs on upper leaves and the blotches are small, irregular in size and shape whereas ring spot occurs more on lower leaves and forms small, more evenly spaced rings. Herbicide damage is seen as more evenly-spread droplet-sized lesions.

**Boron toxicity**



**Physiological blotching**



## Dark blotches

### *Boron toxicity, physiological blotching*

Boron toxicity appears as small dark spots on barley leaves. In some situations the blotches can have yellow margins and be confused with the spot form of net blotch but mostly the spots are much smaller. Spotting often occurs more towards the leaf tips and along the leaf margins and is worse in older leaves. What is called physiological blotching is observed in some barley varieties under certain environmental conditions. The symptoms vary from large brown smudges to small dark spots. The cause of these symptoms is unknown but crop damage rarely occurs.

*Desiccant herbicide damage*



*Herbicide damage*



## **Tan or pale blotches – without yellow or dark margins**

*Zinc deficiency, herbicides*

Where light coloured blotching or spotting occurs on leaves and where yellow or dark margins are absent, the cause is mostly due to herbicide damage or zinc deficiency. Zinc deficiency causes irregular shaped large blotches but commonly they are elongated and form on either side of the leaf midrib beginning from the middle of the leaf. Herbicide damage is usually seen as small droplet-sized lesions.



*Zinc deficiency*



## **Stripes – necrotic**

*Zinc deficiency, manganese deficiency, triazine herbicides*

Severe zinc deficiency can result in longer blotches extending along the leaf, usually on either side of the midrib. Manganese deficiency results in a general paling and weakening of leaves and whole plants with striping extending the whole length of the leaf. Triazine herbicides can cause stripes running back from the leaf tips that start yellow and then turn necrotic.



*Manganese deficiency*

*Barley yellow dwarf virus*



## Stripes – yellow

*Barley yellow dwarf virus, iron deficiency, sulphonylurea herbicides,*

Barley yellow dwarf virus (BYDV) is transmitted by aphids so these should also be visible on infected plants. BYDV striping is generally observed from the leaf tips running back towards the stem and along leaf margins. In wheat, purpling of leaves is often also observed. Iron deficiency usually causes a bright yellow striping along the length and affects the whole leaf. Sulphonylurea herbicides can cause paler yellow stripes running from the base of the leaf.



*Sulphonylurea  
herbicide damage*

***Nitrogen deficiency/waterlogging***



***Aluminium toxicity***

## **Leaf tipping**

*Nitrogen deficiency, waterlogging, root damage, drought / wind damage, aluminium toxicity, boron toxicity, triazine herbicides*

Waterlogging and nitrogen deficiency usually occur together and are seen as a yellowing and then dying-back of the lower, older leaves. Where plants are moisture stressed through root damage, drought, or wind damage then leaves can die back from the tips. In this case less yellowing is observed. Aluminium toxicity and boron toxicity in wheat also cause a dying back of leaf tips. The latter cannot normally be distinguished from moisture stress. With triazine herbicide damage, dying back of the leaf tips is usually accompanied by some yellow striping from the leaf tip.

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**Both by Hugh Wallwork, these publications carry more photographs for disease symptom identification as well as information and options for disease control. Also see the book Symptoms of Injury Caused by Herbicides in Wheat and Barley by Deirdre Lemerle.**

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