Identification and field scoring guide for ramularia leaf spot

Introduction
This guide can be used to assist with the identification of the symptoms of ramularia leaf spot (RLS) in barley. It can also be used to help assess symptom severity. Please refer to the AHDB Factsheet ‘Ramularia leaf spot in barley’ for further information about ramularia, including its importance, life cycle, forecasting and control.

Overview of symptoms
Symptoms appear on the upper leaves after flowering. Initial damage is a fine pepper spot (A), which darkens to a square spot, bounded by leaf veins and surrounded by a chlorotic halo (B).

The 5Rs
Mature ramularia lesions can be distinguished from other foliar symptoms by applying the ‘5Rs’:
1. Ringed with yellow margin of chlorosis
2. Rectangular shape
3. Restricted by the leaf veins
4. Reddish-brown colouration
5. Right through the leaf
Disease severity: 1 to 5%
Sparse lesions on upper leaves.

Disease severity: 6 to 10%
More lesions on upper leaves.
Disease severity: 11 to 20%
Upper leaves with some necrosis. Some lesions on middle leaves.

Disease severity: 21 to 30%
Many lesions and severe necrosis on upper leaves. Numerous lesions on middle leaves.
Disease severity: 31 to 40%
Extensive lesions on upper leaves. Many lesions on middle leaves and necrosis.

Disease severity: 41 to 50%
Severe damage to upper leaves. Further lesions and necrosis on middle and lower leaves.
Disease severity: 50 to 100%
Complete lesions (100%) on upper leaves. Severe (50 to 75%) necrosis on middle leaves.

Almost all leaves necrotic with lesions on all leaves.
Other foliar symptoms (not caused by ramularia)

Abiotic or physiological leaf spot confined to upper leaf surface

Unlike ramularia, physiological leaf spots tend to cause superficial browning on upper leaf surfaces and the undersides are unaffected. Although these cause less yield loss, they can trigger the production of ramularia leaf spots.

Mix of ramularia and physiological leaf spot

Spot form of net blotch

Unlike ramularia, net blotch and tan spot lesions are not rectangular or restricted by leaf veins.
When powdery mildew spores attack, a hypersensitive reaction is induced in some varieties which causes distinct leaf spots, commonly known as target spots.
Other foliar symptoms (not caused by ramularia)

Septoria

Tan spot

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Further information

This guide uses findings from the AHDB/Arable LINK Project 3441 ‘Control of ramularia leaf spot in a changing climate (CORACLE)’.

Please refer to AHDB’s Factsheet ‘Ramularia leaf spot in barley’ or cereals.ahdb.org.uk/disease, for further information about ramularia, including its control.

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