Foliar Disease

Cercospora leaf spot

Introduction

Cercospora leaf spot, caused by the fungal pathogen *Cercospora beticola*, has become established as a prevalent foliar disease in the UK in recent years.

The disease is characterised by 3-5mm tan-grey lesions with a reddish-brown border. In the centre, small black dots may be visible and later there may be a white-grey matt of spores.

When: Mid July to October

Symptoms: Circular spots 3-5mm in diameter with necrotic, tan-grey coloured centres and reddish-brown border. Spots coalesce, leading to severe defoliation

Risk: Warm wet weather, with temperatures above 25°C

Severity: Potentially an increasing problem in the UK due to the increase in annual summer temperatures. Yield loss is particularly severe when canopies are stripped of leaves and crops use up sugar re-growing leaves just before harvest. In other countries yield losses have been known to exceed 50%

Advice: Resistance to strobilurin and triazole products is limiting the effectiveness of these fungicides in control programmes against CLS. Use of an SDHI containing product is recommended to tackle Cercospora.

As the disease develops, lesions coalesce and the surrounding leaf becomes necrotic.

The characteristic circular spots or lesions associated with the disease are quite distinct and typically, once more than 5% of foliage is covered, there is an economic loss with root weight, sugars and impurities affected. Under conditions of high temperature and rainfall, cercospora spreads very rapidly increasing both incidence and severity of symptoms.

High levels and prolonged periods (24hrs+) of leaf wetness are associated with rapid disease progression. Severe infection can result in significant loss of the canopy. Plants often respond by producing leaf re-growth which is associated with a loss of sugar content in the root.

The fungus overwinters on infected beet, old leaf residue in the soil and on some weeds such as dock and fat hen. Infected leaf material can remain viable at the soil surface for up to 2 years. This is reduced if the infected material is incorporated below the soil surface. This primary inoculum can be spread by wind or rain splash to infect sugar beet. Warm temperatures, 25-35°C with high humidity (90-100%) and/or high leaf wetness are key factors for successful infection.

Leaf spots usually develop from 5-21 days after initial infection. This lag depends on amount of inoculum, temperature and how wet the leaves have been. Spots typically appear on lower, older leaves first. Droughted, senescing or virus-infected leaves may also show symptoms quicker than healthy, actively growing leaves.

Differences exist between varieties in their susceptibility to cercospora. Details of varietal susceptibility and disease scores can be found on the Recommended List, including CR+ varieties which are specially developed to be less susceptible to CLS.

Cercospora Warnings

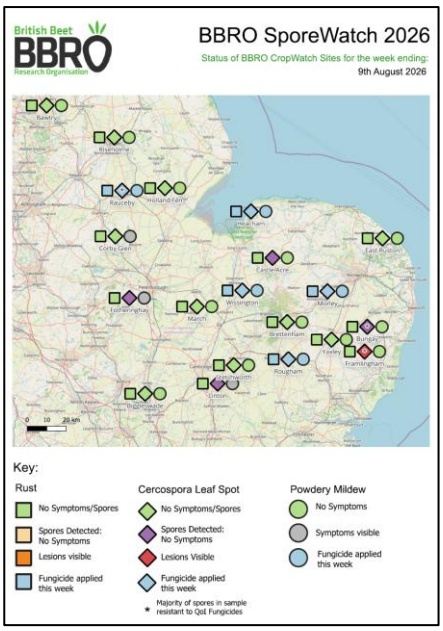
BBRO have two systems in operation each season to help protect your crop and minimise disease incidence: our CropWatch monitoring, and the Cercospora forecast. The CropWatch network uses spore traps to monitor Cercospora spore distribution across the beet growing region. The spore traps are changed weekly and analysed for presence or absence of *Cercospora beticola* spores. Each site is also assessed for symptoms of active lesions (which are actively releasing spores). Also see our weather station data for information on leaf wetness and high temperatures, all factors which drive cercospora infection.

Forecasting Cercospora

Using weather data from the previous 48 hours, each day a forecast is made to estimate how likely it is that your crops are being infected with Cercospora.

BBRO monitors level of risk daily and where clear risk is identified (see map right), growers are sent alerts as a warning that infection may have taken place. After receiving an alert, make regular crop inspections for symptoms of disease.

Important:
BBRO's forecast and warnings should be used as a guide and do not replace the need for individual crop monitoring. By law, you can only apply a fungicide to treat Cercospora when first symptoms of infection appear. Early treatment is vital to minimise disease progression and protect yield.



Left:
Spore Trapping for CLS is used to display up-to-date results and resistance to fungicides

Fungicide resistance management

Cercospora beticola populations worldwide have shown development of resistance to strobilurin and triazole classes of fungicides. BBRO research has shown strobilurin resistance in *Cercospora beticola* populations collected at all BBRO monitoring sites since testing began in 2023. Field trials have also shown insensitivity to triazoles in UK cercospora populations. BBRO continue to monitor for development of any other fungicide insensitivity.

To maintain the sensitivity of currently available chemistry, an integrated approach to disease management is essential. Key things to consider include:

- Variety selection – choose varieties with good disease ratings
- Risk forecasting – BBRO monitoring will identify high risk periods in different areas. Monitor crops to identify initial infection, prioritising crops with lower disease scores
- Optimise efficacy of fungicide applications – apply fungicide when conditions are suitable for spraying, use full dose rate, alternate fungicide modes of action, follow label recommendations for the selected product, keep fungicide intervals to within 28 days
- Good crop hygiene – reduction and removal of sources of infection from previous crops is important. Leaf residues, groundkeepers, spoil heaps and weed beet can be infection sources for future crops. Beet grown in close rotation (less than four years) is at higher risk of disease carry over.