Verticillium wilt symptoms

Always read product labels, consider your local conditions and consult a professional agronomist, if necessary.

Latest information
- Verticillium wilt was found in an average of 16% of crops in harvest years 2009–2011; it was most prevalent in eastern England.
- External seed contamination on seed harvested from a heavily infected crop has been confirmed.
- Late sowing does not allow the crop to escape infection, as verticillium can develop over a wide range of soil temperatures.

Action
- Monitor crops pre-harvest and determine levels of verticillium wilt.
- If verticillium wilt is established, consider variety choice and be prepared to extend rotations.
- Do not use seed from crops with verticillium wilt.

Distribution
In an HGCA-funded project (PR512), the incidence of verticillium wilt was determined on 292 randomly selected crops of winter oilseed rape in harvest years 2009, 2010 and 2011. An average of 16% of crops and 3.3% of plants were affected. About 5% of crops had quite high levels of verticillium wilt, ie over 20% of plants were affected. The affected crops were most prevalent in parts of eastern England, though some crops were affected as far north as Yorkshire.

Severe verticillium wilt was confirmed on various farms from counties which did not have verticillium wilt in the survey samples, including Kent and Herefordshire. Figure 1 should, therefore, be used as a guide to the relative distribution with areas shown as ‘0%’ having some infected crops.

Yield loss
Verticillium wilt (Verticillium longisporum) was initially confirmed in England in 2007 and, since then, many more affected crops have been reported. In 2012, it had reportedly caused yield loss and, as a persistent soil-borne disease, it threatens future oilseed rape production.

Recent studies on single plants with different severities of verticillium wilt indicate that yield loss can occur when more than half the stem circumference is affected and plants are ripening prematurely.

Severely affected plants showed decreases in thousand seed weight of between 12% and 24%. Larger yield losses can occur if the crop canopy collapses and there is seed shedding. Yield impact is expected to vary from year to year, depending on weather and crop factors.

Risk factors
- Short rotations
- Crops that are stressed or affected by other diseases
- Poorly established crops
- Seed from infected crops

Varietal resistance
There have been few replicated variety trials for verticillium wilt in the UK. An experiment in 2010 identified significant differences between varieties in the occurrence and severity of disease symptoms. In this experiment, varieties with low levels of disease included Catana, Compass and Cuillin. Similar differences have been found in experiments supported by plant breeders. HGCA is working towards the development of a future verticillium wilt resistance rating for the HGCA Recommended List.

Figure 1. Distribution of verticillium wilt in winter oilseed rape, 2009-2011.
Crop rotations and agronomic factors

There are limited data available for the influence of crop rotations and agronomic factors as only 46 survey crops were affected during 2009–11. Anecdotal farm reports suggest that short oilseed rape rotations are most likely to be affected but some survey crops in long rotations were also affected.

The effects of sowing date and soil temperatures have been investigated in HGCA experiments. It appears that verticillium wilt can develop over a wide range of soil temperatures so late sowing did not allow the crop to escape infection. Delaying sowing until late September resulted in a yield decrease (in the absence of verticillium wilt) and also increased the risk of phoma stem canker.

Plants with poorly developed roots or plants affected by other disease or stress factors are more likely to be severely affected by verticillium wilt.

Seed-borne infection

There is potential for verticillium wilt to be introduced on seed as an internal seed-borne infection or as a contaminating dust on the outside of seed. An HGCA-funded project (PR512) has confirmed external seed contamination on seed harvested from a heavily infected crop.

Seed from infected crops should, therefore, not be used.

Symptoms

Initially, yellow or brown stripes occur on stems (Figure 2). These extend from soil level up to upper branches as ripening begins. Usually, symptoms occur on a few branches but whole plants can be affected. Severely affected plants ripen prematurely.

Vertical grey stripes are visible as surface stem layers start to decay. At harvest, the stems, pith and roots are grey in colour where the microsclerotia are present. Symptoms are easy to overlook and difficult to identify, especially if phoma cankers and stem lesions are present.

Figure 2. Disease cycle of verticillium wilt in winter oilseed rape.

Information Sheet 22 May 2013

HGCA publications are free to levy payers
To join the mailing list, contact: subscriptions@hgca.ahdb.org.uk

Further information

Peter Gladders, ADAS
peter.gladders@adas.co.uk

Jenna Watts, HGCA
jenna.watts@hgca.ahdb.org.uk

G55: HGCA Oilseed rape guide (HGCA, 2012)
www.hgca.com/diseasecontrol
www.hgca.com/varieties
www.hgca.com/publications

HGCA Project Report 512: Importance and management of verticillium wilt in winter oilseed rape (HGCA, 2013)

HGCA Research Review 72: Relevance of verticillium wilt (Verticillium longisporum) in winter oilseed rape in the UK (HGCA, 2009)

HGCA Publications
T 0845 245 0009
E hgca@cambertown.com
www.hgca.com

© Agriculture and Horticulture Development Board 2013. All rights reserved.