

Disease resistance ratings for OSR wilt likely by 2020

Introducing varietal resistance ratings for verticillium wilt would help oilseed growers counter the soil-borne disease that has been showing up in the crop this month. *Sarah Henly reports*

■ By 2020, growers will be able to refer to resistance ratings for verticillium wilt when choosing which oilseed rape varieties to grow from the Recommended List, hopes Niab Tag's Jane Thomas.

That would be particularly beneficial to the industry because there is no fungicide treatment for soil infected with the causal agent, *Verticillium longisporum*.

Originating from continental Europe nine years ago, verticillium wilt has already reached all the main oilseed rape growing areas of the UK. Yield losses are typically less than 1t/ha, but the damage could be greater if warmer conditions become more common, she warns.

It is about this time of the season, between late June and harvest, growers may first spot the symptoms – grey stems and prematurely ripened pods – though they can be difficult to tell apart from those of other diseases.

LOOK TO THE FUTURE

As wilt-infected stems are harvested, the pathogen's tiny black resting bodies fall to the ground. The next oilseed rape crop in that field is then at risk. Dr Thomas, Niab's head of disease resistance and diagnostics, is hopeful the threat can be lessened in the future.

"If you have the disease on the farm, your key methods of limiting its impact are currently crop hygiene and rotational management. We want to add another dimension by exploiting genetic resistance.



Verticillium wilt symptoms are seen before harvest, says Jane Thomas

"We know from previous naturally infected Recommended List trials and a series of tests by Niab and Adas that varieties differ greatly in their susceptibility. Therefore, we are putting all current and candidate varieties through a new set of trials to measure how meaningful and how consistent the differences are."

Plots are inoculated with *Verticillium longisporum* where the soil is

not heavily infected, and varieties assessed using a common protocol based on previous approaches. Dr Thomas expects disease expression differences to be reflected in yield, but this must be confirmed and reproduced in trials.

DIVERSE RATINGS

"Based on previous Recommended List trials, I can imagine we will produce diverse resistance ratings such that the worst scoring varieties could be as low as 2 or 3 and the best, possibly 8. At present, there is unfortunately no complete resistance showing up."

The Niab team and collaborators at Adas are first investigating whether the scoring protocol needs adapting to give a more accurate result from which to develop the variety ratings.

"Over the three-year project, we

Research reasons

■ This project is confirming some previously observed differences between varieties of oilseed rape to verticillium wilt infection, and extending variety knowledge to test the scope for developing resistance ratings for the Recommended List

■ **Project** Evaluation of resistance levels to verticillium wilt in UK oilseed rape varieties and relevance to productivity

■ **Timescale** July 2015-November 2018

■ **Researchers involved** Niab and Adas

■ **Funders** AHDB and numerous plant breeders in-kind

■ **Cost** £117,400 from AHDB



Key points

■ Previous trials indicate differences in disease expression among varieties to the fungus, *Verticillium longisporum*

■ Meaningful differences would justify the development of resistance ratings for the Recommended List



will pull out stems to assess the severity of visible symptoms, then scrape the outside of those stems to check for hidden internal symptoms of infection. The pods will also be inspected for symptoms of premature ripening.

"In the second and third year, larger blocks containing varieties that exhibit a range of symptoms will either be inoculated or left clean, and the plots taken to yield. By doing this, we should be able to judge the impact of varying levels of susceptibility on productivity," concludes Dr Thomas.

AHDB perspective by Jenna Watts

Research and knowledge transfer manager

■ "First identified in the UK in 2007, verticillium wilt has spread to become a threat to oilseed rape yields across the country. With symptoms hard to distinguish and chemical control ineffective, varietal resistance is being investigated as a part solution. Data from Recommended List trials is helping to establish whether a disease rating scale of 1-9 can be produced for wilt."

