



## Latest Adas Trials Highlight Importance of Verticillium Wilt Tolerance

Results from 2017 ADAS trials are underlining the importance of selecting varieties with strong tolerance to Verticillium Wilt.

With resulting yield losses of up to 25% experienced in mainland Europe, Verticillium Wilt has yet to have a major impact on UK production but many believe it's only a matter of time.

With very little in the way of agronomic control options available, mitigating the potential effects of the disease lies on the shoulders of plant breeders to develop varieties with acceptable levels of tolerance to it.

"We've actually seen the disease in the UK since 2007 and it's been a worry for many growers with some years being worse than others," explains Sarah Hawthorne of plant breeders DSV.

Over recent years, various trials have taken place to try and identify which plants are the most affected, Sarah Hawthorne explains.

**"It's one of those diseases which is difficult to spot until it is too late but it's highly likely that it has been behind much of the production variability we have seen in recent years."**



Infection with the pathogen *Verticillium Longisporum* starts at the seedling stage with carry over of the causal agent in the soil, plant debris or farm-saved seed often being the reason, she explains.

"Once plants are infected, the disease spreads up through the xylem at stem extension before the first symptoms appear as the plant ripens.

"This late visibility of the disease is one of the main reasons it is so difficult to manage – by the time you see it, it's too late – but the impact of the disease can be considerable."

"Claims of resistance are misleading as all varieties will suffer from Verticillium Wilt to some degree in the right circumstances – but whilst some will suffer minimal damage, others can be devastated.

"What is interesting is the consistency of results achieved over the last five years of trials in different growing conditions. Showing tolerance to Verticillium Wilt is very much a key genetic characteristic of some varieties over others."

The hybrid variety Incentive 45 has been the stand-out variety in trials and this has been re-iterated in the latest trials just completed by ADAS.



“We’ve seen this in practice in areas where the disease has taken hold with fields of Incentive 45 being exceptionally clean even when neighbouring fields have been severely affected.

“Plants with poor rooting structures and less than aggressive growing habits in the Autumn tend to be the most vulnerable, so Incentive 45’s strong early establishment could be one of the principle reasons for this exceptional tolerance.

“The three crop rule could take some pressure off the move to tighter rotations which may slow the rate of disease spread, but ongoing revocation of fungicides is unlikely to make

It’s easy to understand why. Depending on the severity of the disease, the yield reduction in single plants can range from 20 – 80%.

“When 50% of plants are affected, you can expect 12- 24% of your yield to be lost but this is very dependent on weather conditions.

“In hot dry conditions that exacerbate the disease yield losses can easily be 25% but on average I would say we lose 1 – 7% of our total crop each year due to Verticillium Wilt.”

The European experience also underlines the fact that no real chemical control exists so the emphasis is on varietal choice and good management as well as crop hygiene.

**“Varietal choice is the most effective way to prevent and control yield losses from Verticillium Wilt. Strongly establishing varieties are essential.”**

“Incentive 45 performed very well in this year’s Verticillium slot trial,” explains ADAS plant pathologist Tim Boor.

“We’ve known Catana, which had a disease index of 29 in this trial, has performed well against Verticillium previously and so this is considered a good standard variety with which to compare others.

“This score shows that the majority of plants had minor symptoms, such as stem striping, pre-harvest rather than early senescence associated with susceptible varieties.

“Incentive 45 had an index of 26 and this was not significantly statistically different from the standard variety Catana, as the two varieties had very similar scores in this trial.”

Whilst Incentive 45 showed only 40% incidence of premature maturity when exposed to the disease, other varieties reach over 90%, Sarah Hawthorne adds.

chemical control any easier in the future so the onus is on plant breeders.”

Developing tolerance to Verticillium Wilt has been a key priority simply because of its widespread build-up in Europe over recent years, DSV oilseed rape specialist Dr. Alex Doering explains.

“As there is a significant presence in many northern European countries some respected research sources in Germany say that it’s their single most important disease threat.”

“Without neonicotinoid seed treatments, good plant health and growth is more important than ever. Damage to plants enhances diseases like Verticillium Wilt so the stronger a plant is the more it can grow away from pest attack and the less the impact of the disease.

“As ever, a good overall package of disease resistance is more important than one very strong resistance to a particular disease combined with one very weak one.”

Variety	Verticillium incidence (%)	Verticillium severity (0 – 100 index)	Premature ripening (%)
<b>Quartz</b>	93	89	91
<b>Incentive 45</b>	54	26	40
<b>Catana (control)</b>	72	29	37

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