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Trials Confirm Importance Of Varietal Tolerance To Take-All

A major trials series has confirmed the importance of variety choice in restricting yield loss in second wheats.

The work, undertaken by ADAS and NIAB over two seasons, compared three renowned good second wheat performers with three varieties poorly suited to this rotational slot.

It showed that while average yield decline between first and second wheats – as reflected by Recommended List data - is around 1t/ha, the difference between poor second wheats such as Robigus and more consistent performers such as Cordiale can be as much as 2t/ha.

The research also confirmed that while severity of take-all is a key component in this yield loss, varietal tolerance is equally if not more important in reducing yield loss due to the disease.

The research project – funded by DEFRA and as part of the Rothamsted led Wheat Genetic Improvement Network (WGIN) - is believed to be the first to compare modern varieties as 1st and 2nd wheats in the same field with and without take-all inoculation.

“It confirms that growers should be reassured that Recommended List data does pick out the second wheat winners and losers,” says head of plant pathology at ADAS, Neil Paveley.

“Robigus – for example, is widely recognised as a poor second wheat. The work showed that it is no more susceptible to take-all than other varieties, but is intolerant to take-all infection - with greater loss of yield per unit of disease than the others in the trial.

“Napier in contrast was much more tolerant to take-all, producing higher yields, and Cordiale appeared to have a level of resistance,” he says.

While Dr Paveley says that the mechanisms of tolerance and resistance cannot be confirmed, the research in this trial series ruled out the influence of cereal cyst nematode or eyespot, both of which were at negligibly low levels.

“It could be that root distribution has a role to play, with more ‘resistant’ varieties having fewer root axes that come into contact with the pathogen which spreads out onto plant roots from debris in the soil,” he speculates.

“However, it is clear from the breeding perspective, that there are opportunities to improve second wheat performance through introducing traits from types such as Cordiale and Napier,” he says.

“The amount of disease seen in a variety though is not the whole story. We also need to work with the best sources of tolerance to improve the varieties we have available.

“In addition, there are sources of resistance in wild grasses that could be introduced into wheats, but this is a long, hard job.”

Dr Paveley’s advice for growers planting second wheats this autumn is to check RL data for varietal performance.

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