

# Heat on white rust in mustard

Researchers from the School of Plant Biology at The University of Western Australia (UWA) and Department of Agriculture and Food, Western Australia (DAFWA) have identified useful sources of resistance to white rust in *Brassica juncea* mustard germplasm sourced from Australia, China and India.

White rust affects cruciferous plants, which include the cabbage family, and the infection can be local, appearing as white pustules on leaves, stems and floral parts, or systemic, as abnormal distorted growth of stems, pods and flowers, which is commonly referred to as stagheads. Flowers displaying staghead formation are sterile.

Caused by the microscopic parasite *Albugo candida*, white rust significantly reduces yield in oilseed Brassicas, such as *B. juncea* and *B. rapa*.

Combined infection of leaves and flowers under conducive conditions for disease development can cause estimated yield losses of up to 20 per cent in Australia and up to 60 per cent or more in India.

Member of a research team funded through an Australian Centre for International Agricultural Research (ACIAR) and Grains Research and Development Corporation (GRDC) project, Associate Professor Martin Barbetti of UWA and DAFWA, said the area sown to *B. juncea* in Australia was set to rapidly increase since the first canola quality mustard (*B. juncea*) cultivar, 'Dune', was released in 2007.



**Associate Professor Martin Barbetti from the School of Plant Biology at the University of Western Australia identified useful sources of resistance to white rust in *Brassica juncea* mustard germplasm from Australia, China and India.**

"Such promising mustard cultivars will be of particular value to farmers in lower rainfall areas because of its drought tolerance and superior adaptation, it can be direct harvested and it provides a reliable and profitable break crop," he said.

But Martin indicated that researchers recognise the need to identify and exploit genes which confer host resistance – a more cost-effective and sustainable control than chemical or cultural means – and a pre-requisite for managing the disease across all three countries.

Forty-four genotypes of *B. juncea*, including 12 from Australia, 10 from China and 22 from India were screened for resistance to white rust under WA field conditions by Dr Caixia Li of UWA.

The seed was obtained through a collaborative ACIAR and GRDC funded project between Australia, China and India.

"Overall, the genotypes from China showed the best resistance, followed by those from Australia, with those from India being most susceptible," Dr Li said.

The research identified genotypes highly resistant to strains of *A. candida* in WA and a much faster, cheaper method of screening seedlings under controlled environment conditions.

This is the first time very high levels of resistance or a reliable method of rapid characterisation of genotype responses to *A. candida* has been made available to Australian mustard breeders.

Genotypes highly resistant to white rust will be used in the mustard breeding program and, if they have appropriate agronomic adaptation, could be deployed as new cultivars to manage white rust in the most disease-prone areas.

For more information go to – [www.ioa.uwa.edu.au](http://www.ioa.uwa.edu.au)



**White rust, caused by the microscopic fungus *Albugo candida*, on a leaf.**



**White rust affecting a flower head causing distortion and development of a 'staghead' formation instead of seed production.**