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ANTHRACNOSE MARKED

WA’s biotechnology foray has delivered a new DNA tool to help cheaply and reliably lock anthracnose disease resistance into the lupin breeding program.

By allowing greater progress in yield, quality and other agronomic qualities, it will ultimately restore the $127 million industry to its pre-anthracnose highs of 1996.

Following the anthracnose incursion, albus lupin plantings collapsed from 30,000 hectares to just 1000 ha while narrow leaf lupin, the staple of WA’s world leading lupin output, is readily infected by the disease.

To recover narrow leaf lupin production, breeders sought to instil natural anthracnose resistance from the Tanjil variety, which involved a comprehensive crossing program and lengthy disease nursery testing.

However, Centre for Legumes in Mediterranean Agriculture (CLIMA) and Department of Agriculture researchers, Hua'an Yang and Mingpei You have found a molecular marker to identify resistance genes and revolutionise this process.

Department of Agriculture Senior Lupin Breeder, Dr Bevan Buirchell said the technology was an economic and accurate alternative to prolonged disease screening.

“The marker will allow breeders to immediately confirm if the desired resistance genes are present in the lines deriving from new crosses. Where it is, that line can be fast-tracked towards commercialisation and where it’s not, we can cut that material from the breeding program.

“It means we won’t waste time growing and testing plants with nothing to contribute to the industry,” Dr Buirchell said.

Dr You had worked on anthracnose at CLIMA and has teamed with Dr Yang, a Department molecular geneticist, to develop the new DNA marker discovery procedure. The new technology, targeting disease resistances, was developed with support from a CLIMA grant and the Grains Research and Development Corporation.

The marker’s ability to identify resistance without disease presence will eliminate the need for disease nursery testing until late in the breeding cycle.
According to Dr Buirchell, the Department’s three year old molecular marker laboratory leads the world in developing and implementing molecular markers in lupin breeding, based on the technologies developed by Dr Yang.

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