



CLIMA Media Release

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SPEEDING UP NATURAL SELECTION

Lupins highly tolerant to the broadleaf herbicide metribuzin and carrying the anthracnose disease resistance gene have been bred in WA, potentially allowing growers to enjoy better weed control.

Centre for Legumes in Mediterranean Agriculture (CLIMA) researcher, Dr Ping Si, has collaborated with Dr Mark Sweetingham and Dr Bevan Buirchell of the Department of Agriculture (DAWA) on this Grains Research and Development Corporation (GRDC) project.

Dr Si identified the highly tolerant metribuzin mutants in a population of the anthracnose resistant, but metribuzin sensitive cultivar Tanjil.

“Mutation occurs naturally, creating genetic variation in germplasm, but at a very low rate,” she said.

“By artificially inducing mutation, we can more quickly create novel and valuable germplasm.”

When metribuzin was applied in screening plots at Wongan Hills, at much higher than the recommended rate, most mutants died.

Dr Si tested another two generations of the surviving mutants in the glasshouse, again at a very high rate.

Seedlings of mutants had no visible leaf damage, while all conventional Tanjil seedlings died.

The mutants were more tolerant than the recently released tolerant cultivar, Mandelup, which had some leaf damage when sprayed at a high rate.

“We now have two very promising mutants with high tolerance to metribuzin, which we also know from identification of molecular markers to carry resistance to anthracnose,” she said.

Dr Buirchell at DAWA's lupin breeding program is evaluating the seed for yield and grain quality.

"If all goes well, we could have commercial release within three years" Dr Si said.

"The Tanjil mutants would be ideal for high rainfall areas in the northern agricultural region where disease risk is high, potentially replacing the original parent and providing growers with a wider safety margin when spraying."

Dr Si is now studying the mutants' tolerances to other herbicides.

With the three year study now concluded, GRDC has funded a new project to improve herbicide tolerance of pulses in WA.

It is in collaboration with the National Pulse Improvement Program, DAWA's Lupin Improvement Program and the WA Herbicide Resistance Initiative at UWA.

Image: CLIMA's Dr Ping Si compares lupins highly tolerant to the broadleaf herbicide metribuzin and carrying the anthracnose disease resistance gene and their original parent, Tanjil, after herbicide tolerance trials.

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