



CLIMA Media Release

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LOCAL BREEDING BEST FOR THE WEST

WA could miss out on a \$400 per hectare crop, while the north eastern and central grainbelt could go without a legume rotation if chickpea breeding is centralised.

According to University of WA researcher, Jens Berger, chickpea varieties bred for more benign, long growing seasons, such as at Tamworth, NSW, could be limited to under 0.5 tonne per hectare yields in low rainfall environments such as at Merredin, WA.

“Chickpea is one of Australia’s highest earning crops, but WA production could be threatened by a shift in breeding focus. Early plant vigour and phenology can differ tremendously across the broad range of genetics assembled in Australia to deliver variable yield performance.

“Most Australian-bred cultivars are too late for optimal productivity in the short season Mediterranean-type environments, typical of WA’s northern wheatbelt,” Dr Berger said.

In an Australian Centre for International Agricultural Research (ACIAR) funded project, the Centre for Legumes in Mediterranean Agriculture (CLIMA) recently finalised two years of studies on 72 chickpea lines across sites at Merredin, WA, Minnipa, SA, Walpeup, Victoria, Tamworth, NSW and Warwick, Queensland.

While lines well-adapted to short-season Mediterranean environments generally performed consistently across the country, most Australian-bred cultivars were productive only in benign environments.

For a given genotype, yield varied from 0.2 to 3.0 tonnes per hectare, depending upon the environment, indicating significant genotype by environment interaction.

According to Dr Berger, this disparity reflects the need for specific, targeted breeding and selection to cater to Australia’s broad range of chickpea growing environments.

“Apart from ascochyta blight resistance, few chickpea characteristics are required uniformly across the country.

“Diverse needs are difficult to meet in a single, centralised breeding program, where prevailing environmental and soil conditions would create selection pressure unable to produce lines offering traits necessary for other areas,” Dr Berger said.

Centralising chickpea breeding in eastern Australia defied this logic, according to CLIMA Director, Kadambot Siddique.

“The early generations following hybridisation must be advanced in the target environment to correctly evaluate for desired traits and develop superior cultivars.

“Responsiveness of chickpea lines to the day length and temperature of a WA environment differed significantly from Tamworth, NSW and Horsham, Victoria.

“More than one third of WA growers have already acknowledged the importance of locally developed varieties by supporting CLIMA’s kabuli chickpea initiatives through the Council of Grain Grower Organisations (COGGO).

“We commend their foresight and hope desi chickpea, potentially a major industry in WA, can also benefit from such local development,” Professor Siddique said.

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