BIOTECH BREAKTHROUGH TO BOOST BUCKS

Researchers are nearing biotechnology breakthroughs to add new characteristics to field pea (worth more than $250 per tonne) and desi chickpea ($450/t) that would support a 150,000 hectare growth in WA production for each crop.

The University of Western Australia (UWA) based Centre for Legumes in Mediterranean Agriculture (CLIMA) has joined with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India and the University of Saskatchewan, Canada, to unravel the mysteries of interspecific crossing and doubled haploid production.

Scientists from both organisations are in WA working with CLIMA researchers on crosses between wild and cultivated chickpeas and also doubled haploid field pea and chickpea research.

“Of the 43 known wild chickpea species, several contain traits of value to cultivated varieties, such as drought tolerance and resistance to ascochyta blight, botrytis grey mould and other major diseases,” UWA researcher, Dr Heather Clarke noted.

“Those wild species are generally incompatible with cultivated varieties and resultant hybrid plant embryos usually die soon after fertilisation.”

However, ICRISAT’s Dr Nalini Mallikarjuna has developed embryo rescue techniques to prevent those progeny from aborting by rescuing the embryos to plant tissue culture.

Dr Monika Lülsdorf, of the University of Saskatchewan, will also collaborate on embryo rescue research, while working with UWA’s Dr Janine Croser and Julia Wilson on chickpea and field pea doubled haploid production.

Doubled haploid production is a high priority for pulse crop breeding and molecular research programs to help fast-track cultivar development and improve the efficiency of molecular marker application.

Improved field pea germplasm would build further momentum for a crop which expanded by 40 per cent in WA this season, to be grown across 100,000 hectares.
CLIMA Director, Professor Kadambot Siddique, who helped cement links with ICRISAT and the University of Saskatchewan during a recent visit to North America, said collaboration was integral to international pulse breeding.

“Interspecific and doubled haploid pulse breeding are challenging fields of research and we’ve agreed with these partners to combine efforts to avoid duplication and improve efficiencies.”

Both visitors will exchange key information to advance Grains Research and Development Corporation supported research projects in Australia. Dr Mallikarjuna’s visit is supported by ICRISAT, the Crawford fund and CLIMA, while Dr Lülsdorf’s is supported by The University of Saskatchewan and CLIMA.

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