**Genetic Characterisation of Plant Genetic Resources at the Australian Grains Genebank**

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Genebanks play a pivotal role in conserving and promoting the genetic diversity of grain crops, which are essential for ensuring global food security and sustainable agriculture. The Australian Grains Genebank (AGG) Strategic Partnership is a joint investment by Agriculture Victoria and the Grains Research and Development Corporation (GRDC) that aims to unlock the genetic potential of the AGG to accelerate pulse, cereal and oilseed crop improvement for the benefit of Australian grain growers.

Plant genetic resources conserved within the AGG are widely accessed by the Australian and international research and breeding communities. So far, more than 18K chickpea, lentil, field pea and lupin accessions have been genetically characterised using the multispecies pulse 30K SNP array. The genotype data has been released publicly through an online repository under a CC BY 4.0 license. Bioinformatic tools being developed in the Partnership are enabling industry to use this data effectively for specific research and breeding questions. For example, the diversity of chickpea accessions conserved within the AGG has been assessed relative to ICRISAT accessions, diversity sets have been selected and visualised in the context of worldwide diversity for several pre-breeding projects, and the analysis of accession genotype data has enabled the detection of admixture within seed packets.

By integrating genomics into traditional genebank processes, the Partnership is developing a dynamic bio-digital resource to enable researchers and breeders to harness the full genetic potential of legume crop biodiversity. Genebank users can now make more informed selections to meet research and breeding objectives, enabling accelerated trait discovery and variety improvement for future generations.