

Genetic regions controlling *Ascochyta* blight resistance in chickpea

Judith Atieno¹

Jenny Davidson¹, Marzena Kryszynska-Kaczmarek¹, Yongle Li², Kristy Hobson³ and Tim Sutton¹

¹ PIRSA-SARDI

² University of Adelaide

³ Department of Primary Industries

Ascochyta blight caused by the fungus *Phoma rabiei* is a major disease of chickpeas in Australia resulting in significant crop loss and management cost for growers. The disease severely impacted the growth of chickpea industry in the late 1990's necessitating the need to find sources of resistance to be incorporated into the breeding program. However, there has been an emergence of aggressive isolates in the recent years that has led to severe disease pressure on the formerly known resistant cultivars.

Progress has been made in identifying new accessions resistant to the two most recently identified aggressive *Phoma rabiei* isolates in Australia from the southern region (Pt Broughton, SA i.e., isolate F17191-1) and the northern region (Gurley, NSW i.e., isolate TR9571) belonging to pathotype group 4. Screening of lines from ICARDA nurseries and a wild *Cicer* collection has identified a number of lines that are significantly more resistant compared to the resistant check line Genesis 090. Genetic analysis using phenotypic data and whole-genome resequencing SNP data of wild *Cicer* germplasm identified three marker-trait associations on chromosomes one, seven and eight for *Ascochyta* blight resistance. The SNP on chromosome 8 is near a region that has previously been reported to control *Ascochyta* blight resistance in chickpea and is in close proximity to the physical location of a NBS resistance gene. KASP markers will be provided to the breeding program for validation and thereafter used in marker-assisted breeding. The results of this study will provide information on potentially new sources of resistance present in wild *Cicer* collections and to make informed choices to aid in pyramiding resistance loci into breeding lines within the Australian breeding program.