

The genetics of crown rot resistance in durum wheat (*Triticum durum* L.)

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Crown rot (CR) is the number one biotic constraint threatening the durum wheat (*Triticum durum* L., $2n=4x=28$, AABB) industry in Australia. Existing commercial durum wheat varieties are all highly susceptible to this disease. To identify resistant sources useful for breeding durum wheat varieties with enhanced resistance to CR, we have carried out a large scale screening. The materials tested include some 400 durum wheat and other tetraploid genotypes but none of them showed high enough resistance. Genotypes that showed high levels of CR resistance are all hexaploid ($2n=6x=42$, AABBDD). As genes conferring CR resistance in hexaploid wheat have been found on all of the three wheat genomes A, B and D, we are investigating how these resistance genes from the hexaploid wheat would perform once they are transferred into durum backgrounds. Several backcross populations between CR susceptible durum wheat genotypes and resistant hexaploid wheat genotypes have been generated and are being genetically characterised. We are also investigating whether there are genes in durum wheat conferring CR susceptibility. If chromosome segments harbouring such susceptible genes can be identified, it may be possible to improve CR resistance of durum genotypes by replacing these segments with segments from more resistant genotypes.