

Reactions of durum wheats to *Fusarium pseudograminearum*, in the Northern grain growing region of Australia

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To identify potential sources of resistance to *Fusarium pseudograminearum* (*Fp*), the causal agent of crown rot, a range of tetraploid germplasm was evaluated for incorporation into the durum-breeding program in the northern grain-growing region of Australia. Annually, Australia produces around 500,000 tonnes of durum wheat, of which 40% is exported. It's estimated that crown rot costs the Australian grains industry \$56 million per year in yield and quality losses. Current durum varieties are highly susceptible to crown rot, with favourable disease conditions causing yield losses up to 50% with losses frequently between 20-30%. Partial resistance has been identified in hexaploid wheats at seedling and adult growth stages. To increase the disease resistance of Australian durum varieties, it is thought that pyramiding these sources with tetraploid resistance sources will capture multigenic resistance traits with loci on the A and B genomes. In Toowoomba, Queensland, seedling evaluations were conducted under glasshouse conditions with leaf-sheath lesioning assessed three weeks after inoculation with *Fp*. Field trials were conducted to assess adult plant resistance, on artificially inoculated black earth soils. Valuable resistance was also identified in diverse origins including *Triticum monococcum*, *T. timopheevii*, *T. turgidum* var. *dicoccum* and *T. turgidum* var. *carthlicum*. Mature plants were assessed for disease incidence and severity by rating the internode lesioning and premature head death, expressed as the number of white or deadheads. Homozygous lines have been produced from hexaploid x tetraploid cross populations, by utilising single plant selection in our crown rot nurseries. These lines show useful levels of resistance whilst retaining important agronomic characteristics, beneficial to durum breeding and the Australian durum industry.