

Identification of Novel Resistances Against Spot-type Net Blotch (*Pyrenophora teres* f. *maculata*) in Canadian Barleys

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Abstract

Spot-type net blotch (STNB) caused by *Pyrenophora teres* f. *maculata* has become a major disease in the recent past in Western Australia. It reduces barley production significantly in Australia and around the world. Canadian lines TR250 and TR251 were found to be resistant at the seedling stage against the STNB isolates prevalent in the state. These lines were crossed with the susceptible but high quality malting barley Gairdner to produce the doubled haploid populations. The populations were screened against two isolates at the seedling stage in the glasshouse. The segregation pattern suggested that more than one gene was operative against STNB isolates. These populations were subjected to map these resistances using SSR markers.

Mapping work on TR250/Gairdner population identified genes on chromosomes 6H and 4H with R^2 value ranging between 21% - 33%. SSR markers Bmag0870 (for 6H) and Bmag0375 (for 4H) have been identified as the closest markers. There is a possibility that an additional gene could be present on 3H. The gene 6H has also been identified from TR251/Gairdner with a similar R^2 values. SSR Bmtttt1 was found to be the closest marker for this gene. These populations are presently investigated for the adult plant resistance genes. This will help to understand the effectiveness of seedling genes at adult plant stage and/or identification of additional APR genes.

STNB resistances are known to be present on chromosome 7H from other germplasm lines like CI 9214, Galleon, Keel, VB9104, and Tilga. The identification of 6H, 4H and 3H loci in Canadian lines would be useful in developing STNB resistant material in high quality susceptible barleys.