

Mapping of crown rust (*Puccinia coronata* f. sp. *avenae*) resistance genes *Pc53* and *Pc54* in oat (*Avena sativa*)

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Oat crown rust caused by the fungus *Puccinia coronata* f. sp. *avenae* (*Pca*) is a major production constraint in North America, Europe and Australia. There are over 100 genes effective against one or more of the *Pca* races, but only a handful of major seedling resistance (*Pc*) genes have been mapped to a known chromosomal location. The goal of this study was to use linkage mapping to identify the genomic locations of two *Pc* genes, and to produce a list of linked SNPs with potential as molecular markers for marker assisted breeding. The preliminary placement of *Pc54* on Mrg02 based on bulked segregant analysis of F_{2:3} families was refined using F₅-derived recombinant inbred lines (RILs) from a cross between the *Pc54* carrier CAV 1832 and susceptible cultivar Otana. The map location was validated using RILs from a cross between CAV 1832 and the *Pc96* differential line. The *Pc53* gene was mapped on Mrg08 using RILs from a cross between *Pc53* carrier 6-112-1-15 and Otana, and validated using RILs from a cross between 6-112-1-15 and the *Pc50* differential line. SNPs closely linked to the *Pc* genes will be converted to PCR based markers to be utilized in marker assisted selection/breeding of oats.