

## QTL mapping of adult plant leaf rust and stripe rust resistance derived from the Austrian winter wheat cultivar Capo

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### Abstract

Leaf rust caused by *Puccinia triticina* is among the most prevalent leaf diseases of wheat worldwide. The Austrian cultivar Capo possesses quantitative and durable adult plant leaf rust resistance, but does not possess any effective major *Lr* gene to our knowledge. We developed and tested three recombinant inbred line populations: Capo×Isengrain, Capo×Furore and Capo×Arina for adult plant leaf rust resistance in well replicated field experiments over locations and years under high disease pressure. In addition, the Capo×Furore population was tested for stripe rust (*P. striiformis*) resistance. In parallel the three populations were genetically fingerprinted with molecular markers (SSR, AFLP and DArT). We genotyped and genetically mapped at least 620 polymorphic markers per population. We calculated linkage maps of all three populations and detected quantitative trait loci

(QTL) for leaf rust resistance. Highly significant Capo derived QTL for leaf resistance were located on chromosomes 2A, 2B and 3B, supporting the hypothesis of quantitative rust resistance in this cultivar. Interestingly in the Capo×Isengrain population the strongest QTL derived from the susceptible parent (Isengrain) and mapped to chromosome 7B, corresponding most likely to the gene *Lr14a*. In addition we found two major QTL for stripe rust resistance in the Capo×Furore population on chromosomes 2B and 3B. The obtained results will be useful for selection and breeding of new cultivars with durable adult plant resistance to leaf rust and stripe rust.

### Keywords

*Puccinia striiformis*, *Puccinia triticina*, QTL mapping, resistance breeding, *Triticum aestivum*

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