

IDENTIFICATION OF NON-HOST RESISTANCE GENES IN WHEAT TO BARLEY YELLOW RUST

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INTRODUCTION

Yellow rust, caused by *Puccinia striiformis* West., is an important foliar disease of wheat and barley throughout the world, and the development of resistant cultivars is the most economical and environmentally friendly method of control. Non-host resistance is studied as a possible source of durable resistance. Two major genes, as well as an undetermined number of minor genes, for non-host resistance to the barley-attacking form of yellow rust, *P. striiformis* f. sp. *hordei*, had previously been detected in the wheat cross Lemhi x Chinese166. In the present study we quantified and mapped the QTLs (quantitative trait loci) for non-host resistance to *P.s.* f.sp. *hordei* in this cross.

METHODS

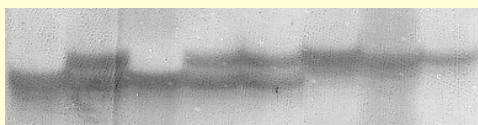
Pathogen

Puccinia striiformis f. sp. *hordei*

Mapping Population

114 F₂ individuals resulting from the wheat cross 'Lemhi' x 'Chinese166'

Molecular Marker Analysis



Linkage Map Construction

JoinMap 3.0

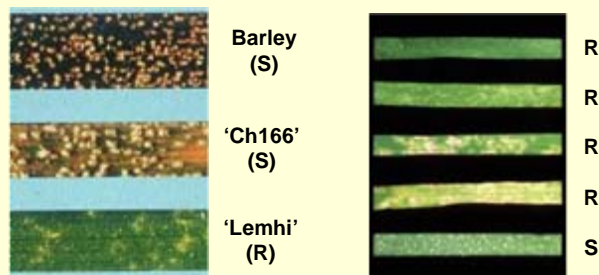


QTL Analysis

MapQTL 4.0

RESULTS

Infection Reaction Types



QTL Identification

QTL	Chrom.	LOD	%expl.
<i>Psh1</i>	1DS	7.1	43.5
<i>Psh2</i>	2BL	9.5	33.2
<i>Psh3</i>	5AL	2.1	5.1
<i>Psh4</i>	6AL	4.2	10.9

CONCLUSIONS

Psh1, *Psh2*, *Psh3* and *Psh4* are the first non-host resistance QTLs to be mapped in wheat.

BUT...

They express a hypersensitive cell death phenotype, similar to host resistance.

THEREFORE...

Would non-host resistance genes, such as these, be a durable source of resistance for our crop species???

Acknowledgments