

IDENTIFICATION OF NON-HOST RESISTANCE

CENIES IN WHEAT TO DADI EV VELLOW DIJET

tadata, citation and similar papers at core.ac.uk

brought to you by

provided by Biblioteca D

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

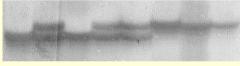
Pathogen

Puccinia striiformis f. sp. hordei

Mapping Population

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

Molecular Marker Analysis





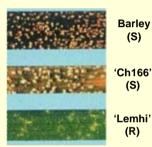
Linkage Map Construction

JoinMap 3.0

QTL Analysis MapQTL 4.0

RESULTS

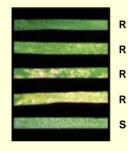
Infection Reaction Types



'Ch166' (S)

(S)

'Lemhi' (R)



QTL Identification

QTL	Chrom.	LOD	%expl.
Psh1	1DS	7.1	43.5
Psh2	2BL	9.5	33.2
Psh3	5AL	2.1	5.1
Psh4	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???

Ref: Rodrigues et al., 2004. TAG 109:425-432

Acknowlegments

P.Rodrigues would like to thank the British Society of Plant Pathology for an M.Sc. scholarship and J.M.Garrood the John Innes Foundation for a Ph.D. scholarship. This work was supported in part by the Department for Environment, Food and Rural Affairs.