



Resistance of European winter wheat cultivars to *Zymoseptoria tritici* isolate IPO88004

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Objective

Septoria tritici blotch (STB) of wheat (*Triticum aestivum*), caused by the fungal pathogen *Mycosphaerella graminicola* (anamorph: *Zymoseptoria tritici*, syn. *Septoria tritici*), is present in most wheat-growing areas worldwide. Host resistance is the most economical and safest method of controlling the disease. Therefore, it is important for plant protection strategies to continuously identify and incorporate effective resistance genes into adapted germplasms. Presented work (phenotyping data) is a part of larger project aiming at identification of resistance genes (*Stb*) to *Septoria tritici* blotch in winter wheat and will be used in near future in association mapping approach.

Methods

In the study we used a set of 83 wheat cultivars registered in the Descriptive List of Agricultural Plant Varieties (COBORU 2012, Poland), 92 cultivars from other European countries and 25 cultivars/lines with identified STB resistance loci including QTLs. The wheat genotypes were tested at adult plant stage under polytunnel conditions with watering system. Fully expanded flag leaves were sprayed with spore suspension of IPO88004 *Z. tritici* isolate. In previous study conducted on seedlings this isolate caused on wheat lines carrying known *Stb* resistance genes **high/low** necrosis: *Stb1*, *Stb3*, *Stb7*, *Stb8* / *Stb6*+ *15*, *Stb2*, *Stb5*. After incubation period, the percentage leaf area covered by necrosis (NEC) and covered by pycnidia (PYC) were measured on flag leaf of each wheat cultivar/line that were used in agglomerative hierarchical clustering analysis with UPGA algorithm (unweighted pair-group average).

Results

Six groups of wheat cultivars/lines were identified and the largest group comprised 132 resistant genotypes with average NEC 18.7% and PYC 8.0% (fig. 1). Within this group, set of 43 highly resistant wheat cultivars were identified (NEC min. 1.1% and max. 15.1%, PYC min. 0.4%; max. 8.1%): Tuareg, Salutos, Samurai, Florett, Intro, Capone, Grapeli, Carroll, Praktik, Tabasco, Chilton, RGT Kilimanjaro, Zappa, Belenus, Joker, Butaro, Kalahari, KWS Dacanto, Riband, Fregata, Elixer, Forum, Estivus, Meteor, Glaucus, Bockris, Satyna, RGT Djoko, Jenga, Heros, Olivin, Zobel, Magnus, Kredo, Kepler, Pamier, Pengar, Julius, Desamo, Gordian, Eron, Pionier, Lear, Mandub and Kranich. In addition in the same subgroup were classified three cultivars with identified resistance loci: Florett (QTL-3B, QTL-6D; *Stb6* + *Stb15*), Tuareg (QTL-4B, QTL-6B; *Stb6*) and Riband (QTL-6B). This may suggest that resistance to STB in European cultivars is contributed mainly by quantitative loci and those with main effects.

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Figure 1. Cluster analysis of the percentage leaf area covered by necrosis (NEC) and covered by pycnidia (PYC) of flag leaves winter wheat cultivars after inoculation with *Zymoseptoria tritici* isolate IPO88004.

