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## PROGRAMME & ABSTRACTS

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## INFLUENCE OF SEVERAL WHEAT PATHOGENS ON THE LEAF RUST DEVELOPMENT

Jerkovic Z.<sup>1</sup>, Putnik-Delic, M.<sup>1</sup>, Jevtic, R.<sup>1</sup> Hanzalova, A.<sup>2</sup>

1)Institute of field and vegetable crops, Maksima Gorkog 30, 21000 Novi Sad, SCG, 2)Vyzkumny ustav rostlinne vyroby , Drnovska 507, Praha-Ryzine , CZ, [jerkovic@ifvcns.ns.ac.yu](mailto:jerkovic@ifvcns.ns.ac.yu)

The investigations of the interactions between pathogens could be interrupted by single strong development of each on the same plant. The adequate methods were not developed until nowadays. The protection by fungicides against particular one was also impossible. The results of the study focused on changes in respond of some genotypes to different powdery mildew isolates in the presence of leaf rust were published.

In our investigation with aim to recognize the influence of some another pathogens on the leaf rust severity, the axiom was that different genotypes with prolonged vegetation period equal in the respond to leaf rust cause prevalent race as seedlings at greenhouse will allow the similar level of the parasite development as adults. The influence of the another pathogens on the density of *Puccinia triticina* pustules (estimated on with mentioned pathogen single diseased parts of the simultaneous multiple diseased leaves on low or intermediate level) in such circum tenses could be estimated according to comparing the pathogens development in the tested material.

The twenty varieties were sown on 25.10.2003. in the pots (three replications) and grown under the natural conditions. Most of them were extremely susceptible to the leaf rust cause. The weather conditions during the growing season were mostly favorable for wheat and diseases development. There was no artificial infections. The estimation of the leaf rust, powdery mildew, septoria leaf blotch and ten spot severity was applied near to the end of the vegetation period (16.06.2004) when the not diseased green leaf area was still present.

The attack of the leaf rust causer was not higher than 50% of the green leaf parts. The reducing of the leaf rust pustules number (to the trace on variety Rapsodia from Czech Republic, 10% on Alibaba or 20% on Complet and Asta) was due to *Pyrenophora tritici repentis* appearance. The density of tan spots was not higher than 20% of leaf area covered. The influence of powdery mildew (maximal attack intensity 50%) and septoria leaf blotch (30%) causers on leaf rust development was not strong separately (Mona) or simultaneous (Zlatoklas).

## SCREENING FOR VIRULENCE OF BLUMERIA GRAMINIS TRITICI USING MOBILE NURSERIES

Radivoje Jevtić<sup>1</sup>, Zoran Jerković<sup>1</sup>, Srbobran Stojanović<sup>2</sup>, Mirjana Staletić<sup>2</sup>

<sup>1</sup>Institute of Field and Vegetable Crops, Novi Sad, Serbia & Montenegro

<sup>2</sup>Small Grains Research Center, Kragujevac, Serbia & Montenegro, [jevtic@ifvcns.ns.ac.yu](mailto:jevtic@ifvcns.ns.ac.yu)

*Blumeria graminis tritici*, the causal agent of powdery mildew, is a regular and economically important disease of wheat in Serbia and a major disease problem in wheat crops in Europe, particularly in northern and western parts. Infection intensity varies in dependence of wheat variety, climate conditions and agricultural practices. Although there have been no epiphytotics in Serbia yet, this disease can play a significant role in yield formation. Successful wheat breeding for resistance to the causal agent of powdery mildew is based on the identification of virulence and changes in the pathogen population. The asexual part of the population of *B. graminis tritici*



consists of pathotypes formed by asexual reproduction in spring. The dynamics of the population is ensured by the combination of pathotypes of different origin.

This paper reviews the results obtained in the period of 7 years, from 1997 to 2003. The population of *B. graminis tritici* was studied during wheat vegetation in the spring, using mobile nurseries in the location Rimski Sancevi near Novi Sad. Wheat varieties and lines possessing resistance genes were sown in plastic pots (33 x 22 x 10 cm). After the one-leaf stage (according to Zadoks' scoring scale) the pots were taken out in a wheat field. After 48 hours, the pots were taken back into the chambers with optimum conditions for plants and pathogen development. Average intensity coefficient (AIC) was calculated by multiplying the values of infection intensity with corresponding coefficients of infections type (for type 0=0.0, for 1=0.2, for 2=0.4, for 3=0.8 and for 4=1). In the cases when the disease occurred in traces ('tR'), the coefficient values corresponding to infections type were used. The sowing dates in mobile nurseries, dates of exposure, taking back to the nurseries and scoring were almost identical in all years. The screenings for virulence of the population of *B. graminis tritici* were done from mid-March till the end of May. During that time, 8 mobile nurseries were in use.

At the significance level  $\alpha=0.01$ , positive correlations existed between the virulence of the population of *B. graminis tritici* per year. A strong correlation ( $r=0.757$ ) was found between the years of 1998 and 2000, and complete correlation ( $r = 0.908$ ) between 1998 and 2002. The highest average intensity coefficients (AIC) were in the lines with resistance genes Mli, Pm 5+8, Pm7, Pm8, Pm2+ and Pm2 (15.5, 14.3, 13.9, 13.6, 12.1 and 11.3, respectively), the lowest in the lines with Pm5+6 and Pm2+4b+6 (0.7 and 3.0, respectively). Significant and highly significant correlation coefficients were registered between the resistance genes. Complete correlation ( $r=98.5$ ) was registered between genes Pm2 and Pm7, and no correlation between Pm6 and Pm5+6 ( $r=0.024$ ).

Of the known resistance genes, most efficient in the asexual population of the parasite in the mobile nurseries were the gene combination Pm5+6 and the genes from the line C-39 (Pm2+4b+6).

#### **DIVERSITY *Rhizobium leguminosarum* bv. *trifolii* FIELD POPULATION FROM CHERNOZEM, PSEUDOGLEY AND HYDROMORPHIC BLACK SOIL**

**Dragana Josic<sup>1</sup>, Bogic Milicic<sup>1</sup>, Snezana Mladenovic-Drinic<sup>2</sup>, Mirjana Jarak<sup>3</sup>**

<sup>1</sup>Institute for Soil Science, Belgrade, <sup>2</sup>Maize Research Institute, Zemun Polje, Zemun,

<sup>3</sup>Faculty of Agriculture, Novi Sad, Serbia and Montenegro

The presence of indigenous nitrogen fixing microsymbionts of leguminous plants in different type of soil are of great agricultural and environmental significance. To achieve beneficial effect of plant inoculation we need consider the characteristics of rhizobial field population. To investigate the diversity level of rhizobial population, we isolated 80 indigenous *Rhizobium leguminosarum* bv. *trifolii* from soil type chernozem (ch), 27 from hydromorphic black soil (hbs) and 92 from pseudogley (psy). Rhizobia were rescued from nodules of *Trifolium repens* and *Trifolium pratense* from 22 different locations.

Using the IAR (Intrinsic Antibiotic Resistance), HMT (Heavy Methal Tolerance) and Cf (Calcofluor) effect as phenotyping markers, we obtained 28 different isolates from chernozem, 10 from hydromorphic black soil, and 31 different isolates from pseudogley. Genetic diversity of natural field