Breeding strategies of cereal rusts resistance in Hungary: decrease of leaf rust virulence on cereal crops, development of host resistance cultivars

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Leaf rust is one of the most important diseases that affect cereals throughout the world. The pathogens *Puccinia triticina, Puccinia hordei* are obligate parasites. Development of resistant cultivars is one of the most effective and economical means of controlling leaf rust.

Breeding wheat, barley cultivars for resistance against leaf rust is a priority in the Hungarian plant breeding. For prosperous breeding strategy to be successful, it is important to have information on the pathogen population and also on possible resistance sources. The leaf rust resistance breeding program is based on occurrence and virulence surveys which are carried out every year in Hungary. The aim is to follow the changes in the virulence structure of pathogen populations.

Leaf rust (*Puccinia triticina, Puccinia hordei*) on cereal crops occurred in Hungary in 2006 as well. *Puccinia triticina* isolates are tested on differential set. The set is built from 15 near isogenic lines with different Lr genes background. The results from year 2006 have shown big variation between virulence of *Puccinia triticina* isolates. Pathotypes of leaf rust collected from infected winter wheat cultivars were much more virulent, than pathotypes collected from infected triticale plants, they were avirulent on lot of Lr lines. In 2006 the resistance genes Lr9, Lr19, Lr24 and Lr28 were highly effective among the tested Lr resistance genes, and provided good protection against leaf rust. *Puccinia hordei* was an important disease on winter barley in West Hungary at Szombathely and occurred in traces in North Hungary at Kompolt.

Screening for resistance sources is based on field tests. The level and type of resistance against leaf rust were determined in winter wheat, triticale and barley cultivars. Disease susceptibilities of cultivars ranged from very susceptible to resistant. Among the tested winter wheat cultivars GK Kapos, GK Szala, GK Verecke showed high resistance and among the winter barley cultivars Botond and Lambic were resistant against leaf rust. Despite of among the winter triticale cultivars lot of were resistant or moderately susceptible, and only few (Binova, GK Bogo, GK Marko and Kitaro) were very susceptible.

This study presents new results about resistance to leaf rust of wheat, triticale and barley cultivars in Hungary. These data help to Hungarian breeders in their rust resistance breeding program.

Aknowledgement

The author thanks for the financial support, the investigation was supported by GAK 2005 (rezarpak, OMFB 0936/ 2005)

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