

Utilization of Alien Leaf Rust Resistance Genes for Development of Resistant Wheat Genotypes by Backcross

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Abstract: The leaf rust genes *Lr19*, *Lr24* and *Lr35* are effective resistance genes of alien origin. The genes *Lr19* and *Lr24* have been introduced into hexaploid wheat from the wild species *Thinopyrum ponticum* (syn. *Agropyrum elongatum*, $2n = 10x$) and gene *Lr35* from *Aegilops speltoides*. We have used backcrosses and marker – assisted selection (MAS) for the transfer of alien genes *Lr19*, *Lr24* and *Lr35* for leaf rust resistance to elite varieties. The varieties are important bread winter wheats Alka, Astella, Brea, Hana, Klea which possess the HMW-GS alleles that have positive effect on bread making quality. Five varieties were crossed with donor genotypes possessing leaf rust resistance genes *Lr19* and *Lr24* and donor genotype possessing gene *Lr35* from *Aegilops speltoides*. We have obtained wheat populations with seedling resistance genes *Lr19*, *Lr24* and adult-plant resistance gene *Lr35*. These genes were identified in segregating populations by DNA markers. To date, backcrossing has been accomplished to BC2–BC3 and will be continued through cycle 5 after which populations will be inbred by selfpollination and selected by DNA markers and HMW-GS alleles and tested for presence of specific leaf rust resistance genes by phytopathological tests.