

Development of Winter Wheat Genotypes with Unique Combination of Glutenin Alleles by Marker-Assisted Selection

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Abstract: Molecular markers not only facilitate the development of new varieties by reducing the time required for the detection of specific traits in progeny plants, but also fasten the identification of HMW glutenin genes, thus accelerating efficient breeding of quality traits into wheat cultivars by marker assisted selection (MAS). The HMW-glutenin subunits encoded by the *Glu-1* gene are used in wheat breeding for selecting the alleles that correlate with quality. The aim of the present work was to use genetic markers in the segregating populations and to fix in backcross cycles of the unique combination HMW glutenin alleles and to eliminate unfavorable HMW glutenin alleles from the population. Transfer of HMW glutenin genes into offspring was simultaneously controlled by molecular markers. Genotype Kotte was used as donor for new alleles encoding HMW-GS at the locus *Glu-1B* and Swedish bread wheat line was used as donor 21* allele at the *Glu-1A*. We have used cultivars Hana, Danubia, Elpa, Torysa, Simona and Klea as recurrent parents. HMW glutenin components of grain storage were identified from crushed single grain halves and sodium dodecyl sulphate polyacrylamide gel electrophoresis (SDS-PAGE). Backcrossing will be continued through cycle 5 after which populations will be inbred by self-pollination and study the effect of the transfers on quality characters in different genetic background.