Czech Journal of GENETICS AND PLANT BREEDING

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Czech J. Genet. Plant Breed.

Jiří L., Gregová E., Hermuth J., Stehno Z., Kraic J.:

Diversity of HMW-*Glu* Alleles and Evaluation of their Effects on some Characters in Winter Wheat Landraces and Old Cultivars

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Earliness, morphological and agronomic characters and grain quality were studied in 123 European landraces and old cultivars of winter wheat in three-year field experiments. Simultaneously, HMW *Glu*-alleles were identified in these cultivars by means of SDS-PAGE. Within this set of cultivars 224 *Glu*-lines (with occurrence over 5% in the cultivar) were identified carrying 3 different allelic combinations at 1A, 10 combinations at

1B and 3 combinations at 1D chromosomes, respectively. Relatively rare were alleles 2* at 1A and 3+12 at 1D as well as alleles 8, 6, 9, 7, 13+16 and 17+ 18 at 1B. Allele 20 at 1B was identified only in cultivars from DNK, CHE and EST. Allele 2* at 1A locus was found mainly in cultivars from Eastern, South-Eastern and Central Europe. Allelic combination 17+18 at 1B was also characteristic of cultivars from Central Europe. However, the gluten patterns themselves were not a sufficient tool for geographic characterisation of cultivars. The composition of *Glu*-alleles influenced the earliness of cultivars (alleles 2* at 1A, 17+ 18 and 6 at 1B and 3+12 at 1D). Spike length was positively affected by allele 1 at 1A and number of spikelets per spike by alleles 2+12 et 1D chromosome. Allele 2* was also associated with lower grain weight per spike. Crude protein content was decreased in cultivars where GS at 1A locus was absent (0). The value of gluten index was considerably higher (59.2) in cultivars bearing allelic combination 5+10 at 1D. A number of alleles affected the values of SDS micro-sedimentation test.

Keywords:

wheat; HMW glutenins; *Glu*-alleles; agronomic characters; grain duality

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