



Characterization of agronomic and quality traits and HSW-G5 compositions from the progenies of common wheat (*Triticum aestivum* L.) with different protein content

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ABSTRACT. High molecular weight glutenin subunits (HMW-GS) play an essential role in wheat processing quality. In this study, we evaluated the genetic pattern with HMW-GS composition between generations and examined whether agronomic and quality traits were correlated with each other. A wheat (*Triticum aestivum* L.) cultivar with high protein content and 2 cultivars with low protein content were subjected to a reciprocal cross. Sixteen agronomic and 4 quality characteristics were investigated. A total of 216 seeds from each F₂ generation were chosen randomly and analyzed for HMW-GS composition using sodium dodecyl sulfate-polyacrylamide gel electrophoresis. Agronomic and quality characteristics were not significantly different

between reciprocal crosses, indicating no cytoplasmic effect on the characteristics studied. The separation ratio of 2 HMW-GS loci was 9:3:3:1, indicating no linkage between any 2 loci. The novel HMW-GS N was detected in cultivar R145, which did not follow the Mendelian segregation ratio. A Glu-A1a(1) band was not detected in 1 individual from Tian8901xR145. Average grain weight per spike was significantly correlated with quality characteristics and may be a suitable criterion for selecting high protein content in wheat breeding programs.

Key words: Common wheat; High-molecular weight glutenin subunit; Quality; Sodium dodecyl sulfate-polyacrylamide gel electrophoresis; *Triticum aestivum* L.