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## WHEAT CHARACTERIZATION THROUGH HIGH MOLECULAR WEIGHT GLUTENIN AND TECHNOLOGICAL QUALITY PARAMETERS

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**Key-words:** Wheat genotypes, HMW-GS, physicochemical analyses, rheological analyses, wheat quality Bread wheat (*Triticum aestivum* L.) genotypes present storage proteins, more specifically, high molecular weight glutenin subunits (HMW-GS), which together with low molecular weight glutenin subunits (LMW-GS) and gliadins, are responsible for gluten properties, as strength and extensibility. They are genetically controlled and are not affected by environment. Wheat characterization is essential in breeding programs, especially in relation to its technological quality, which is highly influenced by environment. The objective of this study was to characterize 20 wheat genotypes (three control cultivars and 17 lines) of 2009 crop season, from Embrapa Wheat VCU testing (Value for Cultivation and Use) planted in Três de Maio, Rio Grande do Sul state, Brazil, in relation to its HMW-GS and technological quality. The VCU assay is used to characterize wheat advanced lines, indicating the end-use quality. The samples were analyzed at Embrapa Wheat as for hectoliter weight (HW); thousand kernel weight (TKW); grain falling number (GFN); total flour yield (TFY); Minolta color ( $L^*$ , brightness;  $a^*$  and  $b^*$  values, redgreen and yellow-blue, respectively); alveography (T, tenacity; E, dough extensibility; T/E ratio; SI, swelling index; W, flour gluten strength; T/SI ratio; and EI, elasticity index); hardness index (HI); and gluten content (GI, gluten index; WG, wet gluten; and DG, dry gluten); and HMW-GS (with Glu-1 score calculated according to Payne et al., 1987), that defined a score for each HMW-GS alleles based in its quality association. For this group of data, considering the 20 tested genotypes for HMW-GS profiles, 65% presented Glu-1 score of 10, 20% score of 9, and the other 15%, corresponding to 5, 6, and 8 scores.

In relation to technological quality, the main results as for alveography, W values were, two samples  $> 300 \times 10^{-4}J$ , 16 samples  $> 200 \times 10^{-4}J$ , and two samples

$< 170 \times 10^{-4}J$ , being 27.2 to 61.5% the EI variation; as for WG, 30.01 to 41.23% the range; as for HI, 45 to 96 the variation. The significant correlations observed were: W x Glu-B1 ( $r = -0.58$ ); W x Glu-D1 ( $r = 0.69$ ); T x Glu-A1 ( $r = 0.45$ ); T/SI ratio ( $r = 0.45$ ); EI x Glu-A1 ( $r = 0.56$ ); EI x Glu-B1 ( $r = -0.60$ ); EI x Glu-D1 ( $r = 0.74$ ). These results suggest that although technological quality is influenced by environmental influences, various parameters are related with HMW-GS (most of genotypes in this study presented good quality for bread-making). However, it is advisable repeat this evaluation in the same location for at least two consecutive years to confirm our results, especially in relation to wheat technological quality. ■

### REFERENCES:

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