Abstract

The changes in the stability of wheat quality in response to agro-environmental variations affect the efficient selection in breeding programs. The aim of this study was to determine the effects of allele combinations of glutenins of high (G-BPM) and low (G-BPM) molecular weight upon the distribution of gliadin and glutenin-rich fractions, and the stability of industrial quality characteristics of flour from a group of 26 lines of seasonal wheat. Five agro-environmental conditions were generated for cultivation by agronomical management, in the autumn-winter 2006-2007 cycle, in Celaya, Guanajuato, Mexico. Flour protein fractionation in 50% propanol was performed to obtain fractions rich in monomeric protein or gliadin (50PS) or rich in polymeric protein or glutenin (50PI), determining the 50PS/50PI ratio. Protein quantification was performed spectrophotometrically at 280nm. Mixograph mixing time (TMA), dough strength (ALVW) and stretchability (ALVPL) were evaluated. Most quality characteristics showed a linear tendency through the environments, yielding a similar quality in the different agro-environmental conditions. The most stable combination for 50PS and 50PI was 2*,17+18,2+12/Glu-A3e,Glu-B3h,Glu-D3b. The combination 2*,17+18,2+12/Glu-A3e,Glu-B3g,Glu-D3b yielded a higher protein amount and a higher 50PS/50PI relation in restrictive environments. The ideal variety is that with an optimal value and a low variation in quality parameters along an ample environmental quality spectrum. It is difficult to find genotypes with good quality and great stability in all of the environments.