

P-021: Plasticity of wheat (*Triticum aestivum* L.) storage proteins: quality versus quantity

Azin Rekowski¹, Monika A. Wimmer¹, Christian Zörb¹, Günter Henkelmann²

¹Institute of Crop Science, Quality of Plant Products (340e), University of Hohenheim, 70593 Stuttgart, Germany

²Bayerische Landesanstalt für Landwirtschaft (LfL), 85354 Freising, Germany

E-mail: azin.ghabelrahmat@uni-hohenheim.de

Concentration and composition of storage proteins affect the baking quality of wheat. Although both are influenced by late nitrogen fertilization, it is unclear whether compositional changes suffice to improve the baking quality, and whether such effects are genotype specific. In a pot experiment, two winter wheat genotypes belonging to different quality classes were supplied with two levels of late N. Protein subfractions were analysed by SDS-PAGE. Late N supply increased grain yield and protein content in both, but improved baking quality only in the class A genotype, correlated with stronger changes in glutenin and gliadin subfractions. Where baking quality was improved, this occurred at the lower late N level. Overall, composition rather than amount of gluten proteins was decisive for flour quality. Measures for enhancing grain protein concentration and composition are less necessary for class B genotypes, opening up an opportunity to reduce N fertilization in wheat production systems.

Keywords: baking quality, gluten, grain protein concentration, grain protein composition, late nitrogen fertilization, *Triticum aestivum* L.

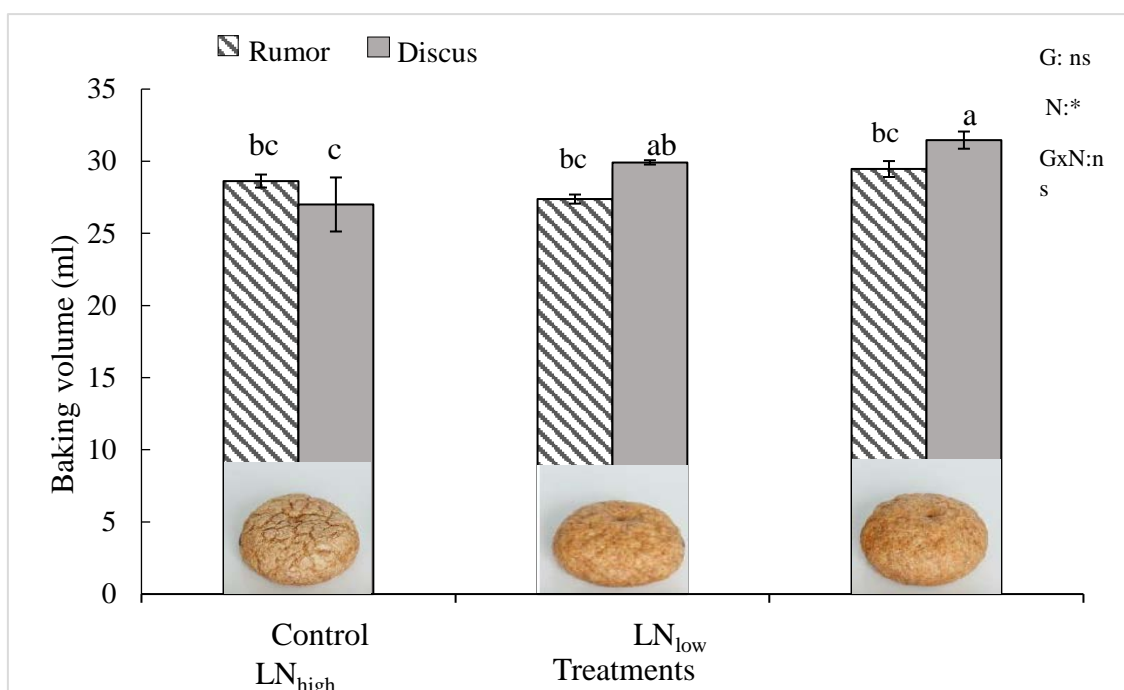


Figure: Baking volume [ml] in response to late N fertilization (Control, LN_{low}, LN_{high}) for the two genotypes Rumor and Discus. Bars represent mean values \pm SE (n = 3). Different letters indicate significant differences between all treatment combinations ($p \leq 0.05$). Two way Anova results are shown in the upper right corner. G: genotype; N: different fertilizer treatment; ns: not significant; *: significant effect. Representative pictures of rolls produced by the micro baking test for Discus are shown at the bottom of the graph.