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A SUSTAINABLE DURUM WHEAT CHAIN
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GLUTEN FORMING CAPACITY OF ARGENTINEAN DURUM WHEAT GENOTYPES (*TRITICUM DURUM* DESF.) IS RELATED TO CULTIVAR'S INTRINSIC GLUTEN STRENGTH AND PROTEIN LEVELS.

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For the *durum* wheat-pasta chain, grain protein (PROT), and hence, gluten content of semolina (WGC), are key factors associated with superior pasta texture and cooking quality. Both attributes have proved to be closely related, and predominantly influenced by environment. However, cultivars can differ significantly in WGC even at similar PROT levels, revealing the existence of genotypic differences in their gluten forming capacity (GFC), represented by means of the WGC/PROT ratio. Although this fact could give rise to controversy during grain or semolina trading, it still remains under investigated for the set of cultivars grown in Argentina. To shed light on this topic, a multi-environmental study was conducted over a three year period in representative sites of Southern Buenos Aires province, to investigate the response of five genotypes sown in ten environments, concerning their GFC and WGC. As expected, WGC of genotypes were closely associated to PROT levels (between 11,7% and 18,4%), varying from a minimum of 28,6% to a maximum 47,4% ($r=0,89$, $P\leq 0,0001$). GFC also varied broadly, within the range of WGC/PROT between 2,20 and 2,82, depending on genotypes' gluten strength ($r=-0,47$, $P\leq 0,0001$) and protein levels ($r=-0,31$, $P\leq 0,05$). Thus, weak and moderate-to-weak gluten strength genotypes (Gluten Index < 70) exhibited their highest GFC in the lower range of PROT levels, experiencing a significant decline in the upper ones (WG/PROT from 2,81 to 2,35). Instead, moderate-to-strong and strong gluten cultivars (Gluten Index > 70) showed inferior GFC at low PROT levels, leading to WGC below those observed for weak or moderate-to-weak cultivars. However, the latter behaved more stable, or even raised their GFC with increasing protein levels (WG/PROT from 2,24 to 2,82), resulting in WGC comparable, or still higher to those measured in weak or moderate-to-weak cultivars.