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# FROM SEED TO PASTA III

A SUSTAINABLE DURUM WHEAT CHAIN  
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### IRRIGATION EFFECTS ON QUALITY CHARACTERISTICS OF DURUM WHEAT IN TUNISIA

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Durum wheat accounts for more than 50% of the total wheat-growing area in the Mediterranean region, where it is used for the preparation of diverse food products such as pasta, couscous and bread. Water stress is a major limiting factor for a maximum wheat yield potential. Durum wheat is grown under supplemental irrigation in central Tunisia. Kairouan accounts for more than 30% of irrigated wheat. However, the region's insufficient water resources force farmers to use irrigation. The purpose of this study was to determine the effect of irrigation on durum wheat technological quality. Sixteen advanced lines and seven durum wheat varieties from the national breeding program were tested under two water regimes: full irrigation (100% ETP) and reduced irrigation (50% ETP) during 2016-2017 cropping season. The trial was lead out in a complete randomly design. the following quality traits were determined on harvested grain: yield grain, grain protein content, 1000 Kernel weight, test weight, moisture content, sedimentation volume, gluten index and semolina yellowness. The results showed that water regime have differentially affected the quality parameters. Grain yield, test weight, 1000 kernel weight and gluten strength increased with irrigation. However, the protein content and yellow pigment content among the pasta making quality characteristics have been found to be at the highest levels for all varieties and advanced lines in deficit irrigation. Under both regimes, highly significant correlations were found between grain yield and protein content ( $r=0,51$ ), between gluten strength and the grain protein content ( $r=0,57$ ) and between test weight and yield ( $r=0,6$ ). Thus it could be suggested that in order to combine acceptable quality characteristics with the highest grain yield in the region, a supplemental irrigation exceeding the level of 50% ETP should be applied.

ABSTRACT