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ASSESSMENT OF SOME QUALITY AND YIELD COMPONENTS TRAITS IN OLD AND MODERN TUNISIAN DURUM WHEAT VARIETIES UNDER RAINFED CONDITION

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Durum wheat grain quality has become, in recent years, one of the main breeding goals, due to the increase in market demand for good durum's quality despite many biotic and abiotic constraints. This work aims to evaluate some grain quality traits and yield components of 27 tunisian durum wheat old cultivars, 5 tunisian improved varieties and 7 ICARDA inbred lines, under rained conditions in Mornag station (Tunisia), for 2 years 2015 and 2016. Results showed that yellow index (b* value) has the highest heritability across the environments (0.9) followed by grain protein content (Gpr) ranging from 0.87 to 0.96 and gluten strength (SDS) with a range of 0.82 to 0.9, respectively. However, all the other traits related to yield components showed a medium heritability. Furthermore person's correlation between the 12 traits demonstrated a very strong significant positive correlation between GY (grain yield) and NS (number of spikes/m²) 61.30%, between NGS (number of grains/spike) and TFT (total fertile tillers) 64.27%. The b value is highly influenced by TFT (total fertile tillers) 46.12%, TA (Seed total area) 41.5% and NGS (number of grains/spike) 34.58%. Whereas, for Gpr we observed a significant positive correlation with BY (biological yield) 40.19% and a significant negative correlation with TW (test weight) - 43.14%. Clustering analysis based on mean values of all the traits across the environments classified the collection into 3 main groups; the first group includes the genotypes with high yellow index, high gluten strength and high grain yield; the second groups is composed of genotypes with high total seed area and high test weight and the last group is formed with genotypes with high biological yield and high protein content. This study allowed us to screen from the old varieties the genotype with a desirable trait that could be used for further breeding programs.