

Example of abstract.

Identification of QTLs for grain yield in durum wheat grown across a broad range of Mediterranean environments

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The genetic capacity of durum wheat (*Triticum durum* Desf.) to sustain yield under variable rainfall patterns has been investigated in IDuWUE, a project funded by the EU. A population of 249 RILs (Kofa x Svevo) was evaluated in 16 trials (Italy, Spain, Morocco, Tunisia, Syria and Lebanon). Two major, epistatic QTLs for grain yield, plant height, peduncle length, SPAD, and kernel weight were identified on chrs. 2BL and 3BS. The R^2 values for grain yield of the 2BL and 3BS QTLs were 21.5 and 13.8%, respectively. The effects of these two QTLs were validated in 11 additional trials. In view of the relevance and consistency of their effects on grain yield and other agronomic traits, fine mapping of the 2BL and 3BS QTLs is underway in the EU-funded project TriticeaeGenome. Association mapping was also used to identify QTLs for yield and other agronomic traits. A collection of 189 accessions (Maccaferri et al., 2006. Plant Genetic Resources, 4:79-85) was evaluated in 14 trials. For highly heritable traits, such as plant height, heading date, peduncle length and kernel weight, SSR markers showing significant associations were identified in up to 10 environments (R^2 from 5 to 10%). As to yield, the majority of the markers significantly associated with phenotypic values were identified only in two to four environments ($R^2 < 5\%$). Our study indicates the feasibility of using both linkage mapping and association mapping to identify QTLs for grain yield and other agronomic traits in durum wheat.

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