

DISSECTION OF DURABLE LEAF RUST RESISTANCE IN DURUM WHEAT

P. MANTOVANI*, M. MACCAFERRI*, S. GIULIANI*, A. MASSI**, E. DEAMBROGIO**,
M.C. SANGUINETI*, R. TUBEROSA*

*) Department of Agroenvironmental Sciences and Technology, Viale Fanin 44, 40127 Bologna, Italy

***) Produttori Sementi S.P.A., Via del Macero 1, 40050 Argelato (BO), Italy

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Leaf rust, caused by *Puccinia recondita* f. sp. *tritici* Eriks, is a serious disease of durum wheat (*Triticum durum* Desf.) worldwide. Genetic resistance has been the primary means to manage leaf rust. Race-non specific resistance, commonly known as adult plant resistance (APR), have proved to confer durable resistance over a long period of time, in different environments and against diverse pathotypes of the fungus. Breeding wheat cultivars with durable rust resistance is an effective strategy to control this disease. The Italian durum wheat cv. Creso shows a high level of resistance to *P. triticina* that has been considered durable and that appears to be due to a combination of a single dominant gene and one or more additional factors conferring partial resistance. Durable resistance in Creso can provide a valuable source to increase durability of leaf rust resistance in durum wheat, through marker assisted selection (MAS). To dissect the quantitative and durable leaf rust resistance of Creso, a QTL analysis starting from a recombinant inbred line (RIL) population has been undertaken. The F6 RIL population is composed of 184 single seed descent lines from the cross between the cv. Colosseo (Mexa mutant x Creso) and Lloyd (Cando x Edmore). RILs have been planted using a completely randomized block design with two replications, and have been artificially inoculated with a mixture of several leaf rust isolates already tested in the parental lines. The RILs have been genotyped with SSR markers. A total number of 313 SSRs were screened for their polymorphism in the parental lines and 143 over these 313 markers were polymorphic. To date, up to 92 SSRs were genotyped on the entire RIL population. Software JoinMap V3.0 was used to calculate marker order and recombination distances. In total, 24 linkage groups were constructed most of which were composed of few markers (from 2 to 5) due to the small number of markers available; 10 markers resulted unlinked. On average, the markers' position was in close agreement with the consensus map for bread wheat and with a recently described durum map (Jurman et al., unpublished data). As of now (June) the RILs are being phenotyped for their resistance to leaf rust. The phenotypic and the molecular data will be analysed to identify markers significantly associated to genes/QTLs conferring tolerance to rust.