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Poster Abstract - C.07

DEVELOPMENT OF THREE GENETIC MAPS FOR THE DISSECTION OF THE GENETIC BASES OF AGRONOMICAL KEY TRAITS IN DURUM WHEAT

D. MARONE*, E. MAZZUCOTELLI*, L. MATTEU*, N. PECCHIONI**, L. CATTIVELLI*, A.M. MASTRANGELO*

*) C.R.A.-Experimental Institute for Cereal Research section of Foggia, S.S 16 Km 675, 71100 Foggia, Italy - danielamarone@hotmail.com
**) University of Modena e Reggio, faculty of Agronomy, Via Kennedy 17, I-42100 Reggio Emilia, Italy

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The main goal of durum wheat breeding consists of obtaining high yields with a good grain quality level. Protein content and gluten quality are the most important traits involved in determining pasta cooking value. Nevertheless a number of factors, due to extreme environmental conditions and to the presence of fungal pathogens heavily affect grain yield for both quantitative and qualitative aspects.

The use of genetic maps based on molecular markers could greatly enhance the manipulation of genetically complex traits such as grain quality, stress tolerance and disease resistance, supplying information on QTLs controlling these traits. Six cultivars characterized by different behaviour in terms of yield, grain quality, drought tolerance and resistance to fungal pathogens have been selected at the-Experimental Institute for Cereal Research, section of Foggia, and used as parental lines of three segregating populations: Creso x Trinakria, Ofanto x Cappelli and Cirillo x Neodur. Creso and Trinakria have been selected for different drought tolerance while Ofanto and Cappelli for high yields under favourable and unfavourable conditions. Cirillo and Neodur, as well as Ofanto and Cappelli, show a great difference in gluten index (higher in Cirillo and Ofanto than in Neodur and Cappelli), despite they are very similar for protein content, indicating that the different quality traits are related to gluten strength . Some varieties are also characterised by a different level of resistance to *Septoria Tritici*. Infact, Creso and Cappelli are clearly more resistant to this pathogen respect to Trinakria and Ofanto.

F7 seeds for about 110 lines are now available for each cross and about one hundred microsatellite and biochemical markers with know map position and covering all chromosomes have been found polymorphic between our cultivars. In particular, 86 markers have been found polymorphic between Creso and Trinakria (a average of 6 markers per chromosome), with a minimum of 3 markers on 4B and a maximum of 10 markers on 2A. A lower level of polymorphism characterises the other two parent couples: 67 markers have been individuated for Ofanto x Cappelli, for which a minimum of 4 markers are available for each chromosome, except 1A and 6A, and 54 for Cirillo x Neodur, with at least 3 positioned markers except for 6A, 5A and 4B chromosomes.

Finally, a number of common markers (19 common to the three crosses) will allow the construction of a consensus map to integrate mapping data from the three populations.