Proceedings of the 57th Italian Society of Agricultural Genetics Annual Congress
Foggia, Italy – 16/19 September, 2013
ISBN **978-88-904570-3-6**

Poster Communication Abstract – 5.40

STUDYING THE GENETIC BASIS OF DROUGHT TOLERANCE IN GRAPEVINE ROOTSTOCKS

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association study, drought stress, rootstocks, stress tolerance, Vitis

Water deficit is widely recognized as one of the major constraint in the Mediterranean and semi-arid regions where a large part of the world's premium wines are produced. Since the introduction of new varieties in the wine industry is not so straightforward, breeding grapevine rootstocks for tolerance to drought is becoming a key strategy for the future. A Genome Wide Association Study (GWAS) and a Candidate Gene (CG) approach were used to investigate the genetic basis of drought response mechanisms in an *ad hoc* core-collection consisting of 96 different genotypes of *Vitis* spp. and hybrids, selected to ensure the maximum genetic variability of a larger population of commercial, germplasm and new bred rootstocks. The physiological and growth responses to water deficit of more than 500 one-year old potted cuttings were evaluated over 30 days in semi-controlled conditions. For each genotype, three well-watered control plants were mantained at 90% of the Field Capacity (FC) determined by gravimetric method and three plants were subjected to water stress. After 7 days, water deficit was gradually established to reach first a moderate stable water deficit (50% FC for 7 days) and then a more severe and stable water deficit (30% FC for 7 days). Finally, stressed plants were fully irrigated to evaluate the level of plant recovery. Stomatal conductance was correlated with plant growth evaluation (leaves and shoots biometric measures) to define different response classes and thermal infrared imaging was implemented for the first time as a valuable remote sensing tool for high-throughput phenotyping in a GWAS experiment.

Acknowledgements: Italian "Progetto AGER, bando Viticoltura da Vino" (SERRES, 2010-2105)