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Poster Communication Abstract – 5.16

RESPONSE TO DROUGHT OF DURUM WHEAT GERMPLASM HARBOURING THE 7EL1 INTROGRESSIONS FROM THINOPYRUM PONTICUM ON CHROMOSOME 7A

KUZMANOVIC L.*, DODD I.**, VIRILI M. E.*, GIOVENALI G.*, CEOLONI C.*

*) DAFNE, University of Tuscia, Viterbo (Italy)
**) Lancaster Environment Centre, Lancaster University, Lancaster, UK

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Abiotic stress occurrence and magnitude are in continuous intensification worldwide, with drought being the one that raises most concerns for agriculture. Understanding of genetic and physiological basis of the plant response to drought has a major impact on breeding for crops such as wheat, grown on vast areas with temperate climate, yet strongly affected by increasing water shortage. Here we report the first results of screening for growth rate, spike fertility and dry matter accumulation dynamics under drought stress at different developmental stages, of three durum wheat-*Thinopyrum ponticum* recombinants carrying introgressions of the alien donor on 23%, 28% and 40% of their 7AL chromosome arm (named R5, R112 and R23, respectively). The response of all recombinants to the imposed (early vegetative and meiosis stages) and naturally occurring (field) drought, was to some extent similar, yet the R23 recombinant showed the most significant changes of the measured morpho-physiological parameters *vs* its non-carrier control line. This recombinant had significantly higher leaf growth rate, spike fertility and dry weight accumulation in grains *vs* biomass. Drought induced at meiosis caused significant decrease (-52%) of the spike chaff biomass in R23 *vs* its control, while maintaining grain number significantly higher (+35-50%). This result indicates that under stress the presence of the alien segment determines an increased assimilates translocation in grains, which is one of the key strategies of crops towards higher yields. The analysis of dry weight accumulation in spikes of field-grown plants, over a 20-day period after anthesis (daa), confirmed this hypothesis. From 8 to 20 daa, the percentage of biomass allocated to spike chaff and rachis was significantly lower (6-15% and 2-11%, respectively) and higher in grains (8-29%) in R23 compared to its control line. R5 and R112 recombinants did not show any similar difference *vs* their controls, thus suggesting that in the 28-40% *Th. ponticum* segment exclusively present in R23, genetic factor(s) for more efficient biomass allocation is(are) present. Complementary analyses on sugar content in tiller and spike tissues are underway.