

## DURUM WHEAT ROOT SYSTEM RESPONSE TO ABIOTIC STRESS

URBANA VIČIŪTĖ I.\*, BONFIGLIOLI L.\*, PAGNOTTA M. A.\*

\*) University of Tuscia

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Durum wheat (*Triticum turgidum* L. subsp. *durum* (Desf) Husn.) is one of the major cultivated crops across the Mediterranean basin. In this region, abiotic stresses have a significant impact on durum wheat cultivation and resulting in loss of total production up to 72% and 40% for drought and salinity, respectively.

Under abiotic stress conditions, the root system is crucial for crop adaptability and productivity, and its response depends on stress timing, intensity, and duration. Moreover, high-throughput analysis technologies allow to determine more detailed root system response and the target root traits for crop improvement under abiotic stress. Present work was conducted in the frame of the ECOBREED project (European Union's Horizon 2020 research and innovation program under grant agreement No 771367).

The aim of this study was to evaluate the phenotypic root system response of four durum wheat genotypes (one drought and salt tolerant landrace and three modern varieties) under drought and salt stress across the time from seedlings until the maturity. The experiment was performed in the greenhouse of Tuscia University, Viterbo, Italy, in pots. During the experiment, stress conditions (drought and salt) were applied four times, where drought conditions were managed by discontinuing watering, and the salt pots were irrigated with salt solution (250mM NaCl), 3 times per week. The roots phenotypic data were collected after each treatment and analysed using the high-throughput software Win-RHIZO.

Although all genotypes' roots responded to abiotic stress during the whole experiment very differently, at the end of the experiment the landrace J. Khetifa has parameters significantly higher than the ones of the analysed modern varieties. Our results indicated that local landraces could provide

alleles, which introgressed into modern cultivars can be very useful to improve for drought and salt tolerance.