

**PROJECT TITLE**

High throughput phenotyping of durum wheat accessions under salt stress

**CONSORTIUM**

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## SUMMARY OF THE REPORT

The aim of this study was to evaluate salt effects on the root system among six contrasting durum wheat genotypes, using a high-throughput phenotyping technique at seedling stages. In order to choose a stress level sufficiently high to cause a visible effect within a few weeks of treatment, but not too strong to kill the plants, two pilot experiments were performed, each approx. 3.5 weeks. As a result, it was decided to run the main experiment using the two treatments of 0 and 500 mM NaCl. The experiment was run with 72 rhizotrons using the *GrowScreen-Rhizo 1* platform in a Randomized Block Design with 6 replications, 6 genotypes and 2 salinity levels for around 4 weeks. Plant material consisted of six durum wheat accessions: J. Kethifa (highly salt tolerant), Cham1 (moderately salt tolerant), and four lines that are also under evaluation in the framework of the ECOBREED Horizon 2020 project with contrasting root angles, Pelsodur, Vulci, Azeghar, and Sebatel. Plant phenotyping was automatically performed until roots reached the bottom of the rhizotrons (max. depth 90 cm). Measurements were taken seven times, after 3, 6, 10, 13, 17, 20 and 24 days after seedlings were transferred into the rhizotrons. Main experiment results showed that the salt stress effect on durum wheat root-traits was significant, varied between genotypes, and over time. These results can help to select tolerant and susceptible genotypes at the seedling stage and identify promising durum wheat parental lines to insert in future breeding programs to create lines able to tolerate salt stresses.