

Poster Abstract - D.01

GENOTYPE BY ENVIRONMENT INTERACTION ANALYSIS FOR GRAIN YIELD IN BARLEY (*HORDEUM VULGARE* L.) GROWN IN MEDITERRANEAN ENVIRONMENTS

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Mediterranean regions are characterized by the unpredictable timing, duration, frequency and intensity of the annual rainfall and of drought stress. Crop production may therefore vary erratically over the years owing to the interactions between the genotypes and environments (GEI), and in the harsher environments, crop failures may occur. From this, the importance of GEI analyses emerges, particularly in relation to research activities aimed at improving crop performances in diverse and difficult environments.

According to this perspective, our study was carried out to evaluate the yield performances of 24 barley genotypes across 6 different environments in Sardinia, which is characterized by a Mediterranean climate. The genotypes were chosen from three different groups: Sardinian barley landraces (SBL), improved varieties (VAR) and recombinant inbred lines (RILs), obtained from the cross between two pure lines extracted from Sardinian landraces and one improved variety.

Additive main effects and multiplicative interactions (AMMI) analysis was used to investigate the major GEI effects. AMMI analysis has shown that: i) environment and GEI effects were the main causes of variation for yield levels, explaining 67.1% and 26.7%, respectively, of the model sum of squares ($P \leq 0.001$); ii) genotype performances mainly differed according to their group of origin; and iii) RIL groups showed the more stable yield performance across Sardinian environments; performance of the VAR group was superior in the favourable environments, while the SBL group showed the best performance in the adverse environments.