



Conference Programme & Book of Abstracts

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**Leveraging Genetic Innovation
for Resilient African Food Systems
in the wake of Global Shocks**

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Effect of Genetic variation on the nutritional value of a MAGIC-Subset chickpea (*Cicer arietinum* L.) Population under Mediterranean environments

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Abstract

Chickpea (*Cicer arietinum* L.) is an important source of protein, and minerals for human consumption. The development and selection of high nutritional value chickpea germplasm can help alleviate many human health problems associated with protein and micronutrient deficiency. In this study, a subset of 171 improved lines (F8) selected from a large MAGIC population were grown under two Mediterranean environments (Morocco and Lebanon) to assess the population genotypic variability and investigate genotype * environment interactions (GEI) for seed nutritional quality traits (protein content and nutrients concentration). The results revealed high genotypic variation and significant differences between the tested genotypes for all seed's nutritional quality traits. Protein content varied from 12.14 to 31.51% with a maximum recorded for the genotypes M-2968 and M-63 at Morocco and Lebanon respectively, Fe and Zn concentration ranged from 46.37 to 93.44 ppm and 48.64 to 77.49 ppm respectively. The genotypes Ghab-5 (at Morocco) and M-1237 (at Lebanon) showed the highest Fe concentration and the genotypes M-1613 and M-1478 showed the highest Zn concentration at Morocco and Lebanon respectively. The genotype * environment interaction showed a high effect of the environment on major of the seed nutritional quality. Despite these interactions, 14 genotypes with high levels of Pr (>23 %), Fe (>70 ppm), and Zn (>60 ppm) in both trial sites were identified. In addition, across both locations the genotypes M-2073, M-2972, M-165, M-2600 and M-1432 showed a stability of protein content, Fe and Zn concentration. Correlation analysis showed a negative correlation between protein content and Fe concentration. No correlation was recorded between protein content and Zn concentration.
