

# FAO/IAEA International Symposium on Plant Mutation Breeding and Biotechnology



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## EVALUATION OF THE SERKS FAMILY GENES AND YIELD OF SOME BARLEY INDUCED LINES USING GAMMA RAYS FOR DROUGHT TOLERANCE.

In this study, we assessed the performance of five mutations of barley (*Hordeum vulgare* L) resulting from irradiation of mother variety Ecsad 176 by two doses of gamma rays (150 and 200 Gy) under drought stress. Mother variety Ecsad 176 and two controls, California Mariout and Barjuj, were used for comparison. The results showed that three mutants lines showed insignificant increase when compared to the mother and two checks varieties for seed weight/plant, higher number and weight of grains main spike and along main spike. Onemutant line, 5/1/150, out-yielded significantly the three controls, which indicates that gamma irradiation produced a new mutant line with increased yield under drought conditions. We also assessed gene expression of Somatic embryogenesis receptor-like kinases (SERKs) in those mutants, controls and other accessions. We found that The HvSERK1/2 transcript was significantly up-regulated and peaked in the leaf of 5/1/150 mutant line. We did not detect significant variation in gene expression of gene HvSERK3 between the mutant lines. In general, SERKs family genes showed the highest expression level in the leaf compared with roots and stems. These results suggest that barley SERKs genes may participate in barley development and plant response toward drought stress. This knowledge could be applied in targeted breeding, with the possibility of increasing the mutation induction of plant drought tolerance.

### Country or International Organization

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