

Abstract

Today, the lack of irrigation water, the presence of soil diseases, and the low yield and quality of the product in the soil bed have led to the development of hydroponic systems. Despite the importance of drought stress in the early stages of plant growth and deployment, this issue has been neglected in corrective programs as a selection criterion. Therefore, in order to determine the QTL, morphological, physiological traits of barley under drought stress in early stages of barley growth, a test was conducted on 138 pure recombinant strains of barley obtained from a cross between Nure and Tremois parents. This research was conducted in 1396 in Boyntern laboratory of Zabol University in a factorial experiment based on a completely randomized design with three replications in drought stress and without drought stress levels. In this experiment, germination percentage, germination rate index, stem length, root length, shoot length to root length, rootstock weight, root dry weight, vinegar weight, Stem dry weight, root number, seed strain, water soluble carbohydrates were evaluated. Controlled QTLs of these traits were identified and determined under drought stress. QTL mapping was performed using WinQTL Cartographer 2.5 software version. Statistical analysis was performed including analysis of variance, correlation between traits, stepwise regression, cluster analysis, principal components analysis and factor analysis using SAS software version 9.3.

Keywords: Drought stress, quantitative traits position (QTL), pure recombinant trap (RIL).



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**Mapping genomic areas of barley in hydroponics condition
under drought stress**

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