

## عنوان مقاله:

Qualitative and Physical Properties of Barley Grains under Terminal Drought Stress Conditions

## محل انتشار:

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## خلاصه مقاله:

Drought stress is the major limitation for crop yield, which depending on the time of occurrence, could decrease the number of grain as well as their weight. Barley (*Hordeum vulgare* L.) is one of the tolerant cereals that its grain components have an important role in human and animal nutrition; however, physical and biochemical properties of grains affected through drought stress are still poorly understood. In this study, barley genotypes ( $n=6$ ) with different levels of drought tolerance were studied in a 2-year field experiment under well-watered and terminal drought stress conditions. In order to measure physical properties of grains, digital images were taken and some morphological features were obtained by using Image Analysis Toolbox of MATLAB software. Biochemical properties of grains were also measured. Results proved that size, weight and also quality of the grains were significantly affected by drought stress ( $P < 0.01$ ). Grain starch content decreased and protein content increased under drought stress at anthesis stage in all genotypes, but drought-sensitive genotypes interestingly had more percentage increase in protein content. Furthermore, genotypes varied in total sugar, sucrose, glucose and fructose content. Drought stress affected grain size and finally 1,000-grain weight of barley genotypes by reducing area and minor axis length of grains. Correlations between 1,000-grain weight and minor axis length, grain area, starch and sucrose content were significant ( $P < 0.01$ ). These results emphasized in both conditions that size-dependent features of grain particularly minor axis length and area may be serving as useful traits for estimation of 1,000-grain weight and biochemical properties in barley

**کلمات کلیدی:**

Grain size, Hordeum vulgare L, Image analysis, Protein, Starch

**لینک ثابت مقاله در پایگاه سیویلیکا:**

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