

عنوان مقاله:

Drought Tolerance in Cultivated and Wild Barley Genotypes: The Role of Root Characteristic System

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خلاصه مقاله:

There are contrasting reports on the relationship between production and drought tolerance of crops with root structure. The presented research aimed to evaluate grain yield and root-related traits (in two depths) under optimal and drought stress conditions and assess the effect of root-related traits on grain yield and drought tolerance in cultivated barley (*Hordeum vulgare* ssp. *vulgare*) and wild barley (*H. vulgare* ssp. *spontaneum*). In this experiment, 30 barley genotypes were evaluated in pot culture experiment for root traits and in the field for grain yield and drought tolerance for two consecutive years. The results indicated that the genotypes with high root dry weight, area, volume and length and root to shoot ratio in depth 0-30 cm have also high value of these root traits under the depth of 30-60 cm. In this study, the root system size increased when the plants imposed to drought stress, and the level of increase was higher in the deeper soil layer. The wild barley genotypes Hsp06, Hsp74 and Hsp79 had high averages of the root dry weight, area, volume and length under both water environments. The results of farm experiment indicated that the genotypes from cultivated barley mostly have higher yield potential; however, the wild barley genotypes mainly have more yield stability under drought stress environment. The wild barley Hsp71 was identified with both high yield potential and stability under drought stress. Root dry weight and root to shoot ratio were negatively correlated with grain yield under control conditions. Under stress condition, root area, length and volume were positively correlated with yield stability index. Results indicated that the vigorous root system is not necessarily related to higher grain yield in barley; however, higher yield stability under stress environment is highly related

کلمات کلیدی:

.Drought, Root structure, Wild ancestors, Yield stability

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