

عنوان مقاله:

Screening drought tolerance of alfalfa in early growing stages Bolormaa Bayarchimeg^۱, Ching-Hsiang

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خلاصه مقاله:

Introduction: For nomadic herders like Mongolians, the continental climate of the country brings the biggest challenge, particularly during winter or spring when the temperature reaches -۳°C or when the livestock deliver its off-spring. During this time, nutritious hay requirements become the key to survival. In semi-arid climate conditions like Mongolia, cultivating drought-tolerant crops for hay has become important. Materials and Methods: Nowadays, one of the recommended crops is alfalfa (*Medicago F.*). Alfalfa has deep vertical roots; this species is able to absorb waters from about Δm in depth and, more importantly, it is a great source of protein. Thus, it is aimed to investigate the alfalfa's drought tolerance in early growing stages. In order to differentiate levels of drought tolerance on alfalfa varieties, two experiments were conducted to establish the screening method under drought stress and compare different drought resistance among alfalfa varieties grown from different places. Alfalfa's drought tolerance was tested in the growing stage in its box by withholding irrigation. In the second stage, drought stress is stimulated by different concentrations of PEG ۶۰۰۰ to determine alfalfa's drought tolerance in the seedling stage. Results: It revealed that in the box test, even after the irrigation was stopped, the alfalfa kept growing while only some nodes dried out. During the drought period, the proline content increased significantly in all varieties. In the first measurement, it fluctuated between ۰.۱ to ۰.۴ but, seven days later in the second measurement, it was between ۰.۷ and ۰.۹. Based on the proline content result, it can be said that varieties "Nutag Belcheer" and "Burgaltai" are best during long-term drought stress. Finally, the PEG (Polyethylene Glycol) was used as irrigation in different concentrations and applied twice at ۳-day intervals. After seven days of second PEG treatment, varieties "Middle East" and "Burgaltai" remained alive in all treatments. Variety "Known You Alfalfa" in ۱۰% PEG died just after the first time PEG was applied and "Nutag Belcheer" in ۳۰% died after the second PEG was applied. Proline content was also measured and ۲۰% PEG treatment had the highest proline content. In terms of varieties, "Known You Alfalfa" had the highest result, and both "Nutag Blecheer" and "Burgaltai" had the same result as each other, which was also the lowest. Conclusions: In conclusion, in long-term drought stress, varieties "Burgaltai" and "Nutag Belcheer" were better than the other two varieties. Furthermore, in the PEG drought ... sim

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Alfalf, Drought, PEG, Proline, Withholding irrigation, Mongolia

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