Assessment of Shade and Drought Tolerance of Wheat grass (*Agropyron deserturum*)

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January 23, 2013
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Abstract

Drought and Low light issue and shadding though human constituents and also shading due to trees in landscape, are main problems in term of For resolution of such problems, selection of resistant, particularly, native species and varieties to shade and drought, is one of the most useful and recommendable method. This study was undertaken in 1390-91 in Greenhouse of Isfahan Universtiy of Technology during two experiments in order to evaluate resistance to shade and drought at different levels of shade of native species of Wheat grass (*Agropyron desertorum*) and digital type fescue (Festuca arundinaceae).The first experiment consisted of four level of shades (0,50,70 and 90%) and two levels of species, was performed in frame of completely randomized design with 3 replicates. The second experiment including three levels of shade (0,50 and 70%) and two levels of irrigation (no irrigation and full irrigation), was conducted in frame of factorial completely randomized design with three replications. Analysis of data in both experiments was performed in form of compound variance. The results of the first trial (study of resistance to shade) showed that shade increased height of both species, delicateness of leaves and reduced tillering. Fresh and dry weight of roots and shoots in fescue species than Agropyron species showed more reduction with increasing shading severity. photosynthetic rate of Tal fescue was more than Agropyron in full light, but in relatively high (70%) shade, Agropyron had more photosynthetic ability.With increasing shade levels, soluble sugar content decreased, as that the fescue speceies showend 46% reduction agains 21% reduction in Agropyron species. Results of the second study (Study of drought resistance in different shades) showed that a contrasting shade and drought cause reduction in negative effect of drought on leaf color and wilt in both species.Reversibility percentage of Agropyron species was more than Tal Fescue under 50 and 70% shade. Agropyron species showed less reduction in root fresh and dry weights than Fescue species in shade and drought conditions. Also, Agropyron showed low percentage of root mortality in 0 to 20 cm depth and 50 to 70% shade.In drought and ful light conditions, Tall fescue produced more proline than Agropyron, but in 70% shade, the Agropyron produced more proline than Tall fescue In full light and drought conditions, there was no any signifincant difference between two species in term of production content of malondialdehyde. In 50% shade, Tall fescue produced less MDA than Agropyron, but under 70% shade, content of this compound was low in Agropyron. Plants those were faced to drought, Agropyron had more activity of Peroxidase enzyme than Tall fescue. It's expected that Agropyron species under irrigation and dorught conditions able to tolerate shadding levels upto 70%, while Tall fescue species may had acceptable efficiency upto 50% shadding.

Keywords: **Agropyron, Tall fescue, shade, drought, proline, malondialdehyde, peroxidase.**