

عنوان مقاله:

Effects of drought on osmotic adjustment, antioxidant enzymes and pigments in wild *Achillea tinctoria* populations

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نویسندگان:

parvin slehi shanjani - *Research Institute of Forests and Rangelands*

Masuomeh Izadpanah - *Research Institute of Forests and Rangelands*

Mohsen Calagari - *Research Institute of Forests and Rangelands*

خلاصه مقاله:

Drought stress is one of the most important factors limiting the survival and growth of plants in the different habitats of Iran. Detailed knowledge about the ecophysiological responses of native plants to drought stress could contribute to the success of breeding and re-vegetation programs. Six wild populations of *Anthemis tinctoria*, were assigned to four drought treatments, i.e. well-watered (100% field capacity), mild drought stress (75% field capacity), moderate drought stress (55% field capacity), and severe drought stress (35% field capacity). Relative water content, dry matter content, osmotic solutes (proline and soluble sugars), antioxidant enzymes (peroxidase and polypolyphenol oxidase), total protein content, and pigments content were investigated. Severe drought stress largely increased accumulations of osmotic solutes and peroxidase activity of the most populations, but significantly decreased relative water content, dry matter content, total protein content and polyphenol oxidase activity in the all populations. Drought stress significantly decreased pigments content, but increased the ratio of carotenoids to total chlorophylls in the studied populations. The positive relationships were observed among antioxidant enzymes activities, and between contents of osmotic solutes and antioxidant enzymes activities. These findings suggest that populations are characterized by a significantly different tolerance to drought, when drought stress occurs. Based on these findings it may conclude that the population ۲۷۴۸۰ is more tolerant to osmotic stress due to specific antioxidative mechanisms, while the population ۱۸۰۴۱ was the least tolerant to sever drought stress. It seems that the population ۲۷۴۸۰ has a higher adoption potential to arid and semi-arid conditions which makes it a candidate of choice in breeding programs. DOR:

<https://dorl.net/dor/۲۰.۱۰۰۱.۱.۲۳۸۳۳۰۱۷.۲۰۱۴.۱.۲.۶.۷>

کلمات کلیدی:

Anthemis tinctoria, Peroxidase, Proline, soluble sugars, Water stress

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