

## Abstract

Drought stress is an abiotic stress that is considered as one of the important factors in reducing plant growth and crop production in most parts of the world, especially in Iran, and it leads to oxidative stress, so plants use different strategies and protection systems to reduce these stressful effects. The most important strategies are the change in antioxidant enzymes activity and increase or decrease in protein-induced proteolysis and changes in the chlorophyll and carotenoid levels. In order to investigate the effect of different drought stress levels on some physiological characteristics, a research project was conducted in 2017 in the greenhouse of Zabol Agricultural Faculty as factorial experiment in a completely randomized design with three replications. The first factor was wheat cultivars (*Tauschii*, *Speltoides*, *Urartu*, *Shabrang*, *Behrang*, *Sistan*, *Argh*) and the second factor was drought stress (90, 70, 50 and 30 percent of field capacity). The results showed that drought stress had significant effect on the concentrations of protein, chlorophyll a and b, carotenoid, catalase, superoxide dismutase, ascorbate peroxidase and malondialdehyde. That's while with increasing the stress, the amount of ascorbate peroxidase varied, so that initially increased and then decreased. This represents the activation of antioxidant system in different wheat species to increase drought tolerance. With increasing drought stress up to 50 percent of field capacity, protein, chlorophyll and carotenoid amounts increased, but with the higher stress these amounts decreased. So it can be stated that to reduce the damage caused by water shortages in the higher stress, the plant has resisted to drought by increasing proteolysis and decreasing protein amount. Due to the fact that plants tolerate some degree of stress, the studied wheat cultivars were able to tolerate 50 percent of field capacity, and with increasing the stress subsequently to higher levels, they showed a decrease in activity and some physiological traits. However, during the process of applying stress, the wild wheat cultivars were superior for these traits. Therefore, further studies are necessary on the wild wheat varieties.

**Key words:** Antioxidant enzymes, Protein, Drought stress, Chlorophyll, Wheat species.



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