

عنوان مقاله:

Evaluation of Water Stress Memory in Compensation Response of Cotton (*Gossypium hirsutum* L.) during Subsequent Water Deficiency

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خلاصه مقاله:

This research was carried out to provide suitable cotton seed for seed propagation in dryland. In this study, the potential of cotton seeds that have been stressed for the third-consecutive year was investigated to evaluate water stress memory responses. The experiment was arranged in split-plot factorial design with four irrigation levels of W_0 (No-irrigation), W_1 (33% FC), W_2 (66% FC), and W_3 (100% FC), as the main factor, and five seed treatments (four third-stressed seeds, i.e. S_{21} to S_{24} , and registered seed), as a sub-plot. Seeds of cotton were grown under different levels of water-stress exposure for three crop-seasons. As results showed, S_{32} received water stress signal in both W_0 and W_3 conditions through physiological mechanisms change. Seeds of S_{32} accumulated the lowest ABA and the highest calcium in exposure to W_0 and W_3 . Enhancement to superoxide dismutase and Aspartate peroxidase activity in leaves of S_{32} in exposure to W_0 and W_1 is another memorial stress mechanism for scarce water acclimation. The highest-potential thirty-boll weight, thirty-fiber weight, and first-harvesting yield were obtained from S_{32} against W_0 , W_1 , and W_2 . Also, the seeds of S_{32} had the most seedling vigor and germination percentage in exposure to W_0 , W_1 , and W_2 . It can be concluded that stress memory, via modification of physiology and morphology of plant behavior, helps plants to tolerate water deficiency when subjected to recurrent drought.

کلمات کلیدی:

Compensation mechanism, Drought tolerant, Seed, Yield

