

عنوان مقاله:

Physiological and agro-morphological response of potato to drought stress and hormone application

محل انتشار:

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خلاصه مقاله:

Potato is considered as a drought sensitive plant. To study the effect of drought stress and hormone on agro-morphological and physiological traits of potato, an experiment was carried out as split plot design based on randomized complete blocks with three replications in ۲۰۱۵ and ۲۰۱۶. The irrigation levels were control (well-watered), mild stress, severe stress and extreme stress, which were arranged in main plots. The second factor included four spaying treatments that were arranged in sub-plots. The foliar applications were as follows: no foliar application (control), gibberellic acid, epibrassinolide and acetyl salicylic acid. Results showed that drought stress and hormones had significant effect on most of the agro-morphological and physiological traits of potato. Leaf dry weight, shoot dry weight, tuber dry weight, plant height, number of stolons, number of tubers, leaf area index (LAI), relative water content (RWC), net photosynthesis rate, transpiration rate, intercellular CO₂ concentration and stomatal conductance decreased, while amount of water saturation deficit (WSD) increased by the drought stress. It seems that the negative impact of drought stress on physiological traits, such as RWC, adversely affected the agro-morphological traits of potato. Except for chlorophyll index, hormones significantly affected agro-morphological and physiological traits of the potato plants. Epibrassinolide improved RWC, WUE, intercellular CO₂ concentration, tuber dry matter, plant height, number of stolons, leaf dry weight, shoot dry weight and tuber dry weight, while application of gibberellic acid had better effects on LAI, WSD, transpiration rate and number of tubers as compared to epibrassinolide. In fact, these hormones mitigated the negative effects of drought stress in potato.

کلمات کلیدی:

Growth hormones, Leaf Area Index, Photosynthesis, Relative Water Content, Stomatal Conductance, Tuber weight

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