عنوان مقاله:

Evaluation of sulfur and foliar application of Zn and Fe on yield and biochemical factors of cumin (Cuminum cyminum L.) under irrigation regimes

محل انتشار:

Journal of Herbmed Pharmacology, دوره 9, شماره 2 (سال: 1399)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

Introduction: Cumin, due to its food and medicinal properties, is one of the important plant species in the world. Moreover, water and nutrition deficiencies are serious abiotic stress factors. So, this experiment was conducted with the aim of investigating the effects of sulfur and foliar application of Fe and Zn on yield and biochemical characteristics of cumin under irrigation regimes. Methods: The experiment was conducted as a split plot on the basis of a completely randomized block design during the ۲۰۱۶-۲۰۱۷ growing seasons with three replications. Experimental factors were arranged in irrigation regimes as main plots at three levels (I۱: No stress (control), I۲: irrigation based on ۴۰% available water discharge, I۳: ۸۰% available water discharge) and foliar application of Zinc (Zn) and Iron (Fe) as subplots [F۱: control (water-soluble), F۲: Iron, F۳: Zinc, F۴: Zinc and Iron chelate] and sub-sub plots including sulfur fertilizer [S۱: control (no use of sulfur), S۲: sulfur fertilizer with Thiobacillus]. Results: Analyzed data showed that total phenol content and flavonoids were enhanced with the increase of drought intensity and the maximum amount was recorded under I۳, while I۳ caused a substantial reduction in grain yield. Flavonoid and grain yield significantly increased in F۴. Total phenol content was the highest in F۲ and F۳ treatments. Application of sulfur fertilizer resulted in a significant increase in peroxidase, phenol and flavonoids. The highest amount of peroxidase was obtained in I۳F۴ and I۳F۳. The largest total soluble sugar (TSS) was resulted by I۳S۲ and the least by I۱S۱. Foliar application of Zn and Fe with sulfur fertilizer increased TSS. Conclusion: The present study suggests that foliar application of Fe and Zn and sulfur fertilizer can improve the injurious effects of water deficiency on cumin plant through alteration in yield and biochemical characteristics.

کلمات کلیدی:

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