عنوان مقاله:

Evaluating the Application of Organic and Chemical Fertilizers for Safranal, Crocin, and Picrocrocin of Saffron (Crocus sativus L.) under Dryland Farming System

محل انتشار:

مجله گیاهان دارویی و محصولات فرعی, دوره 11, شماره 2 (سال: 1401)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

Crocus sativus L. is one of the most valuable medicinal plants and spices. In recent decades, interest in using organic fertilizers as sustainable agricultural has been increased. Cultivation of saffron under dryland farming, in addition to the production of this valuable spice, could prevent erosion, especially in slops. This experiment evaluated the effect of organic and inorganic fertilizers on active ingredients (safranal, crocin, picrocrocin), macronutrients (NPK), and stomatal properties of saffron (C. sativus L.) in a research station (Hamand) near Tehran. The plants were treated with cattle manure (۲۰ t/ha-۱) and foliar application of Delfard (۷ kg/ha/) and Floral P (۲.۵ kg/ha) in a completely randomized block design (CRBD) with three replications in ۲۰۱۵-۱۶. The results of liquid chromatography (HPLC) showed decreasing in safranal content (۰.۰۴-۰.۱۱ µg/g) organic and inorganic fertilizers, whereas the fertilizers enhanced crocin (۸۵-۱۴۶µg/g) and picrocrocin (۳.۵-۱۰.۵ µg/g) concentrations. Although there were no significant differences between the N concentration of floral and control. Organic and delfard-treated plants showed higher N compared to control. A significant increase of leaf P concentration was obtained in plants treated with inorganic realizers, where floral and delfard resulted in ۳.۵ and ۲.۲-fold improvement of P content compared to control, respectively. Delfard had a significant effect in the enhancement of K. The stomatal size remained unchanged, Although their density decreased over fertilizer application. According to the results, it could be concluded that manure, delfard and floral fertilizers can improve the nutritional value of saffron such as crocin and picrocrocin concentrations under dry farming conditions.

کلمات کلیدی:

medicinal plant, dryland farming Delfard, Saffron active ingredients, Stomatal density