عنوان مقاله:

Phytochemical and morphological features of Moldavian Balm (Dracocephalum moldavica L.) and Fenugreek (Trigonella foenum-graecum L.) in intercropping and pure stand cultivation systems and different fertilizer sources

محل انتشار:

مجله بین المللی علوم و فنون باغبانی, دوره 10, شماره 5 (سال: 1402)

تعداد صفحات اصل مقاله: 20

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خلاصه مقاله:

To determine effects of different fertilizer sources on the yield and quality parameters of Moldavian balm (MB) in intercropping with Fenugreek (FG), two factors were analyzed. The first one included three cropping patterns: MB pure stand, FG pure stand, and intercropping of two rows of MB with two rows of FG (۲FG:۲MB); the second factor was fertilizer sources: control plants, ۱۰۰% chemical fertilizer (NPK), ۱۰۰% bacterial biofertilizers + ۲۵% synthetic fertilizer (BF+۲۵NPK), ۷۵% humic acid (HA)+ ۲۵% synthetic fertilizer (۷۵HA+۲۵NPK), and ۷۵% vermicompost (V)+ ۲۵% synthetic fertilizer (۷۵V+۲۵NPK). Results showed that the highest basic microbial respiration , substrate induced respiration and microbial biomass carbon was observed in intercropping of ۲FG:۲MB fertilized with ۷۵V+۲۵NPK. This treatment also increased the seed yield of FG and dry matter yield of MB by ۵۴% and ۸۰%, respectively, and resulted in the maximum essential oil (EO) content of MB (۰.۷۷%) and oil content of FG (۱۴.۲%). In addition, the intercrop of ۲FG:۲MB fertilized with ۷۵V+۲۵NPK improved the EO quality of MB plants by increasing its geranyl acetate and geranial concentration, and also improved the oil quality in FG by maximizing its unsaturated fatty acids content such as oleic and linoleic acids. Overall, we conclude that intercropping of ۲MB:۲FG fertilized with a fertilizer mix composed of vermicompost (۷۵%) and synthetic NPK fertilizer (۲۵%) can be suggested to farmers as an eco-friendly and sustainable system practice for improving EO and oil content as well as quality of FG and MB plants, respectively.

کلمات کلیدی:

Biofertilizers, Essential oil, Fatty acids, Geranyl acetate, soil biological activity