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Enhancing Quality and Yield of European Borage (*Borago officinalis*) by Simultaneous Application of Vermicompost and Mycorrhiza

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Abstract

In order to evaluate the effects of vermicompost, granulated compost and mycorrhiza on qualitative and quantitative traits of European borage (*Borago officinalis* L.) a factorial experiment based on a randomized complete block design with three replications was conducted on the research farm of Faculty of Agriculture, Yasouj University, Yasouj, Iran in 2016. Organic fertilisers (first factor) were applied at five levels (0, 5 and 10 t vermicompost ha-*1*, and 3 and 6 t granulated compost ha-*1*) and mycorrhiza (*Glomus mosseae*) (second factor) at two levels (with and without). The results showed that the effect of organic fertiliser and mycorrhiza application was significant on leaf nitrogen content, which the maximum nitrogen content found for the 10 t vermicompost ha^{-1} combined with mycorrhiza inoculation treatment. Combined effects of organic fertiliser and mycorrhiza application were found to be significant also on leaf phosphorus and leaf potassium content. Borage was harvested three times with 7-10 days between each harvest. During harvest, samples were taken for total chlorophyll content, flowering branches yield, mucilage, and phenol. The results indicated an interaction between harvest time, organic fertiliser and mycorrhiza only significant for chlorophyll content. The maximum chlorophyll content (0.958 mg g^{-1}) was observed for the third harvest, in the treatment with 10 t vermicompost ha^{-1} plus mycorrhiza. In addition, the maximum mucilage content (4.23 %), phenol content (5.07 %) and flowering branches yield (57.45 g m^{-2}) were found for the 10 t vermicompost ha-*1* treatment. Accordingly, it can be concluded that organic fertiliser combined with mycorrhiza can replace the use of chemical fertilisers for Borage production. In this way, negative soil and water contamination effects can be reduced.

Keywords: Biofertilisers, mucilage, nutrients, vermicompost, yield

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