

Abstract

To evaluate the effect of different levels of Nitroxin and humic acid on quantitative and qualitative characteristics of ajowan herb, a factorial experiment in a randomized complete block design with three replications was conducted in Zabol University farm. Treatments included seed inoculation with Nitroxin biofertilizer at 4 levels; 0 (control), 0.5, 1 and 1.5 l ha⁻¹ and humic acid application as fertigation at 4-leaf stage at 4 levels; 0 (control), 1, 2 and 3 Kg ha⁻¹. Experimental results showed that the effect of humic acid on seed weight, number of umbels, number of lateral branches, calcium and nitrogen content of shoot, organic matter content, essential oil percentage and essential oil yield was significant. Comparison of means showed that the greatest percentage and yield of essential oil (4.17% and 64.75 kg per hectare) was achieved at application of 3 Kg humic acid ha⁻¹. In addition to, effect of Nitroxin on all traits except essential oil percentage was significant. Interaction of humic acid and Nitroxin on biological yield, grain yield, organic matter content of shoot, phosphorus, potassium, calcium and magnesium Gamaterpinene, thymol and carvacrol was significant. The greatest thymol (27.3%) was obtained at the interaction level 4 of humic acid and level 3 Nitroxin. The results suggested application of 1.5 liter Nitroxin and 3 Kg humic acid ha⁻¹ is the best treatment in the production of essential oils of ajowan and active ingredients under organic conditions.

Key words: Biofertilizer, Humic substance, Compound of essential oil, Ajowan



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**Effect of different levels of nitroxin and
humic acid on qualitative and
quantitative properties of Ajowan
(*Carum copticum* (L.) C. B. Clarke)**

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