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Evaluation of Levels Sand and Manure on Quntitative and Qualitative Traits of Garlic (*Allium sativum L.*)

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Abstract

One of the important requirements in crop planning in order to achieve high yield and optimum quality is evaluation of plant nutrition systems. Proper soil fertility and plant nutrition can increase the efficiency of inputs while preserving the environment. The present study was conducted In order to Evaluation of Levels Sand and Manure on Quntitative and Qualitative Traits of Garlic(Allium sativium L.), as a factorial experiment in format of randomized complete block design with three replications, in Zabol University Research Institute of Agriculture in a crop year 2018. Treatments, were considered sand in three levels including: shahed, 100, 200 (ton/ha) as the first factor and cow manure in four levels including: shahed, 20, 25, 30 (ton/ha) as the second factor Analysis of variance showed that levels of Sand, cow manure and their interactions on plant height, leaf number, biological yield, economic yield, garlic diameter, allicin, leaf nitrogen, soil volumetric moisture, soil temperature, organic carbon percentage and the total irrigation were significant. Also, the harvest index was significantly affected by simple effects of sand and cow manure levels, and the number of garlic and potassium leaves were affected by cow manure levels. The highest plant height (60.67 cm) and leaf number (18.33) were obtained from the treatment of (100 ton/ha) sand in term of consumption (30 ton/ha) cow manure. Also the most biological yield (13.14 ton/ha), economic yield (12.07 ton/ha), the highest diameter of garlic (12.65 mm) and the highest amount of allicin (6.26 mg/g), the least total irrigation (۷۳۳.۳۳ liters), The highest soil volumetric moisture (16.26%), The least soil temperature (33.83 °C), The highest organic carbon content (1.97%), were obtained from (200 ton/ha) sand under (30 ton/ha) cow manure. In addition, the highest leaf nitrogen content (0.00741 ppm) was observed in treatment non-use of sand in terms of (30 ton/ha) cow manure. The highest harvest index belonged to (200 ton/ha) sand (92.71%) treatment under 30 ton/ha cow manure (93.06%). The most number of garlic (12.8) was obtained in (20 ton/ha) cow manure and the highest leaf potassium content (78.01 ppm) was obtained in ۲۵ ton/ha cow manure. Since the goal of garlic cultivation is to achieve the best yield and yield components, therefore, (200 ton/ha) sand treatment under 30 ton/ha manure is suitable for garlic cultivation in the region.

Keywords: Sand, manure, Garlic Yield, Volumetric soil moisture