



Maximize Crop Water Productivity of Garlic by Modified Fertilizer Management under Drip Irrigation

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Abstract: Semiarid regions forced to maximize utilization from available of water unit, which is a significant factor that affecting not only the agricultural productivity but also extended reclamation projects. Field experiment was conducted in two successive seasons in the Production and Research Station of National Research Centre, Nubaria, Behera Governorate, Egypt, to study the effect of surface and subsurface drip irrigation methods on garlic yield under different organic manure source.

Results showed that the highest and lowest values of the soil bulk density and soil hydraulic conductivity were recorded at sub-surface drip irrigation and NPK and ChM and FYM ChM and FYM under surface drip irrigation system relative to NPK treatments and FYM enriched by 50 % NPK. Organic manure used enriched by 50 % NPK or in specific ratio between both lead to increase all the garlic growth characters. FYM enriched by 50% NPK has the best performance to improve garlic yield with exceed consume of NPK fertilizer from side and from the other one reduced soil pollution by mineral fertilizers and the impact of FYM enriched by 50 % under surface drip irrigation by 19 % comparing with NPK treated plot. Surface drip irrigation has a pronounced effect on garlic yield than sub-surface drip. Garlic yield increased by 18.7 % above sub-surface one. Garlic yield was positively correlated (5% level) with bulb diameter and clove length. Surface drip irrigation has superior effect on the garlic water crop productivity and the increase was highly after of FYM application enriched by 50 % NPK fertilizer than others.

Obtained results data mentioned that the vital role of continuous application of the organic manure in maximizing not only the garlic yield and the other studied growth characters that help in maximizing yield but also improve studied soil hydrophysical properties under investigated irrigation methods.

Keywords: Drip irrigation, organic manure, hydrophysical properties, water crop productivity; garlic.