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Effect of different levels of nitrogen on yield and quality of drip fertigated watermelon

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Statement of the Problem: The scarcity of water resources in Jordan and increasing concerns for groundwater pollution by agricultural contaminants make it important to improve irrigation and fertilization efficiency. Under such arid situations, water and nitrogen are regarded as the most important limiting factors for crop production. Fertigation provides an excellent opportunity to improve crop yield and enhance its quality, and minimize environmental pollution by controlling fertilizers and irrigation water application. Watermelon is one of the major irrigated vegetable crops in Jordan and responds well to fertilization. The objective of the current study was to determine the optimum level of N applied by drip fertigation for higher watermelon yield and quality.

Methodology & Theoretical Orientation: A field trial was conducted to investigate the effect of five different levels of nitrogen (N0=0, N1=10, N2=20, N3=30 and N4=40 ppm N) on crop yield and fruit quality of watermelon. Nitrogen (ammonium sulfate form) was applied through injection into the drip irrigation system (fertigation). Irrigation events were scheduled using soil moisture tensiometer and evaporation Class A-pan.

Findings: The results of the study indicated that addition of N using fertigation had a significant effect on yield parameters represented by the total and commercial yields, total dry matter, average plant yield, fruit number per plant, and total fruit number per ha. Crop yield increased significantly with increasing N level in the irrigation water, as follows: N4=N3>N2=N1>N0. Additionally, increasing the level of N induced significant increases in the length of the fruit. A significant effect for the N level on irrigation water use efficiency was, also, noticed.

Conclusion & Significance: Fertigation can be considered an efficient and significant method in the delivery of N to watermelon, as the crop yield and, to some extent, fruit quality can be improved.

Recommendations: It is recommended to apply N fertilizers to the watermelon crop via irrigation water at a concentration of 30 to 40 ppm N, and at a rate of 70 to 95 kg N/ha, under similar environmental conditions. .

Biography

Asad AlKhader has completed his PhD in Horticulture and Crop Science from University of Jordan in 2012; MSc in Soil and Irrigation from the same university. He is working as a Researcher on soil water and nutrient management issues at National Center for Agricultural Research and Extension (NCARE). He has published five papers in reputed journals and has been serving as a member of fertilizer committee in his country (Jordan). He is also disseminating new irrigation and fertigation technologies among farmers through a pilot project implemented in irrigated areas in Jordan.

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