Effect of magnetic water, irrigation and sulfur soil amendment on the productivity and water use efficiency of eggplant crop.

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Abstract:

A field experiment was conducted in the Agricultural Research Station of King Abdulaziz University located in Hada Al-Sham, 110 kilometers south-east of Jeddah, KSA to identify the effect of irrigating with magnetic saline waters, water salinity level and sulfur amendment addition to the soil at rates of 0, 5 and 10 tons per hectare on the crop production and water use efficiency of eggplant. Five irrigation water salinity level namely: 2000, 4000, 6000, 8000 and 10000 mg/l were used to irrigate the eggplant before and after passing through a magnetic field. Results indicated that, magnetic water increased crop yield and water use efficiency under saline irrigation water compared with non-magnetic water. The yield and the water use efficiency were 18.99 and 15.63 t/ha and (2.01 and 1.84 kg/m³) for magnetic water compared to 11.41 and 9.39 t/ha and 1.21 and 1.10 kg/m³ for non-magnetic water during the both growing seasons respectively. For sulfur addition, the yield and the water use efficiency increases were 19.11 and 15.73 t/ha and (2.02 and 1.85 kg/m³) for the 10 t/ha sulfur, followed by 14.74 and 12.13 t/ha and 1.56 and 1.41 kg/m³ for the 5 t/ha sulfur compared to 11.74 and 9.66 t/ha and 1.24 and 1.13 kg/m³ for 0 t/ha sulfur addition during both growing seasons respectively. Therefore, it is recommended to use magnetic water and sulfur amendment addition with a rate of 10 tons per hectare when using saline irrigation water to improve crop production and water use efficiency.

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