The Effect of Different Compost and Super Absorbent Polymers Combination on Yield and Water Use Efficiency for Tomato in Greenhouse Condition

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Abstract

In order to investigate the effect of different amounts of municipal compost and super absorbent polymer on yield of tomato (*Solanum lycopersicum*) and water use efficiency in greenhouse a factorial experiment was conducted with two factors in randomized complete block design in four replications in Khorasan Razavi Agriculture and Natural Resource Research and Education Center (torough station). First factor was four levels of compost including (C_0=0, C_{15}=15%, C_{30}=30% and C_{50}=50% weight of soil) and second factor was super absorbent polymer at four levels including (G_0=0, G_5=5, G_{10}=10, G_{15}=15 gram per pot). All fertilizers according to soil test as well compost and super absorbent polymers were used before planting. Pots were irrigated at 50% allowable moisture depletion. Results showed that interaction effect of Hydro gel and compost on yield of tomato was significant and the highest yield was 3520 (gr/pot) obtained from $C_{30}G_0$ treatment. The lowest yield was 1588 (gr/pot) and obtained from $C_{50}G_{15}$ treatment. Results showed that interaction effect of Hydro gel and compost on water use efficiency was significant too, and the highest WUE was 57.97kg/m^3 obtain from $C_{30}G_0$ treatment and the lowest WUE was 15.64 kg/m^3 Obtained from C_0G_{15}.The best of interval irrigation obtained from C_{50} treatments equal 8 days. According to the results and beneficial effects of compost on growth and yield of tomato use of compost I preparing of bedding of greenhouse tomato is recommended.

Keywords: **Compost, Super absorbent polymer, Yield, Tomato greenhouse, Water use efficiency.**

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