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Effect of Subsurface Drip Lateral Depth and Spacing on Grass Yield Using Treated Municipal Wastewater Application

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Abstract

The effects of water quality, installation depth and space of subsurface drip irrigation (SDI) laterals on yield and visual quality of turfgrass were investigated. A field experiment was conducted at the experimental farm of Shahrekord University. The experimental design was a Split-Split Plot with experimental arrangement of completely randomized block design with 16 treatments and three replications. Treatments included two types of water quality: well water (W) and treated wastewater (WW), two installation spaces of SDI laterals (45 and 60 cm) and four depths of placement of SDI laterals (15, 20, 25 and 30 cm). Turfgrass indices recorded during the experiment included height, dry mass, color, visual density and growth uniformity. The ANOVA results showed that interaction of irrigation water quality × lateral spacing × installation depth of SDI laterals is significant on the height, dry mass and growth uniformity of turfgrass. Irrigation with wastewater as compared to well water produced grass with significantly higher height and more dry weight. Treatments irrigated with well water had a better growth uniformity than those treatments irrigated with wastewater. Results indicated that there was no significant effect of experimental factors on turfgrass color. The interactional effect of lateral spacing and installation depth on the turfgrass density was significant. Increasing installation depth and laterals spacing caused a decrease in turf's yield and visual quality.

Keywords: Subsurface drip irrigation, Wastewater, Turfgrass, Visual quality, Yield.

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