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Evaluation of Yield and Yield Characteristics of Two Potato Varieties Under Sprinkler and Trickle Irrigation Systems

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Abstract

Because of limiting water resources and increasing demand for food, it is necessary to investigate the effect of irrigation systems on water productivity. This research was conducted to evaluate yield and yield characteristics of two potato varieties under sprinkler and trickle irrigation systems. The treatments were two irrigation systems (sprinkler and trickle irrigation) and two potato varieties (Burren and Satina) in a randomized complete block design with three replications. Full irrigation was done based on moisture depletion from depth of root development in both irrigation methods.. Potato yield and water productivity (WP) in drip and sprinkler irrigation systems showed significant differences ($P<0.01$). The highest potato yield (24.08 ton ha^{-1}) and water productivity (3.83 kg m^{-3}) were obtained in drip-tape irrigation and Satina potato variety treatment. Also, the lowest potato yield (12.97 ton ha^{-1}) and water productivity (1.73 kg m^{-3}) were obtained in sprinkler irrigation systems and Burren potato variety. The potato yield in sprinkler irrigation system was obtained 42 percent lower than trickle irrigation system. In sprinkle system, dried top weight and height of stem were respectively higher and lower than those in trickle (Tape) irrigation system for both potato varieties. Overall, trickle irrigation is suggested for cool and dry climate to increase potato yield and water productivity.

Keywords: Pressurized irrigation, Burren and Satina, Water productivity.

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