Evaluation of the Technical Performance of Drip Irrigation Systems in Pistachio Orchards in Mahvalat Region

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Abstract

Evaluation of drip irrigation systems is performed to improve systems performance. In order to investigate the performance of drip irrigation system in pistachio orchards of Mahvalat region in Khorasan Razavi province, the drip irrigation systems in operation was evaluated during 2014-2015. At first, the general specifications of the selected irrigation systems were recorded and then emitters discharge and pressure were measured in the operating parts. In each system, one manifold was randomly selected and four lateral pipes located at the beginning, one-third, two thirds, and end of each manifold were selected. Emitters discharges at the beginning, one-third, two thirds and end of each lateral pipes and pressure at the beginning and at the end of the lateral pipes were measured in the all selected manifold pipes. Also, the minimum lateral inlet pressure at each manifold was identified by measuring the flow pressure of the all lateral inlets. Results showed that the water Emission Uniformities of the systems (EU) were within the range of 84.89 to 97.10 percent and the systems performances based on this index were classified as good to excellent. Potential application efficiencies of the low quarter of the systems (PELQs) varied from 63.09 to 77.78 percent. Application efficiencies of low quarter of the systems (AELQs) were in the range of 70.10 to 86.42 percent. Based on PELQs and AELQs indexes, the performance of drip irrigation systems in the studied pistachio orchards were good.

Keywords: Evaluation of performance, Application efficiency, Emission Uniformity, Emitter discharge

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