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Research Article

Hydraulic study of different filters used in drip irrigation system

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ABSTRACT

Among the irrigation systems used today, trickle irrigation is one of the most efficient methods, but potential clogging of the emitter and the relatively high capital investment precludes the wide usage of this system. This research conducted had the objective of comparing filtration efficiency and head loss for sand, screen and disc filter used in drip irrigation system. Removal efficiency of the filters and pressure drop with elapsed time with different levels of sediment load concentrations *i.e.* 100, 200, 300, 400 mg/l for different flow rates was recorded. The results of the experiment indicated that there was no definite trend between filtration efficiency with elapsed time and flow rate. However, relationship between filtration efficiency and sediment load concentration indicated that filtration efficiency decreased with increase in level of sediment load concentrations. The filtration efficiency of the disc filter was more and followed by screen and sand filter respectively. The result of experiment indicated that pressure drop across the filters increased for well water as well as for water with different level of sediment load concentrations with elapsed time and flow rates. Head loss evolution in disc filter was faster than screen and sand filters. But for well water pressure drop across the sand filter was more, followed by disc and screen filter was minimum, followed by screen and sand filter, respectively. Results indicated that there was inverse relationship between filtration efficiency and pressure drop. Comparative study shows that disc filter was better than screen and sand filter, respectively.

KEY WORDS : Filters, Time of concentration, Contour interval, Drip irrigation system

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