

Effect of Different Diluted Reverse Osmosis Rejection Water as Irrigation Source for Different Crops

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Wastewater reclamation and its reuse for beneficial purposes is a common goal of many countries particularly in water stressed countries around the world. Cutting edge technologies such as reverse osmosis (RO), micro and ultra-filtration are often used to purify water and wastewater. During the process of the purification of water with RO, wastewater is generated in conventional systems. However, the rejected wastewater from these processes is usually laden with concentrated nutrients, salts, and inorganic materials. Using RO rejection water as irrigation water for agriculture is a viable alternative in the water scarcity area. Hence, study was conducted to see the effect of five different level of diluted RO wastewater along with control treatment for seed germination of *Amaranthus*, cabbage, green gram and maize. Germination study was carried out in the laboratory with completely randomized design comprising three replicates. Treated water was used as control and used to prepare dilutions of 20 %, 40 %, 60 % and 80 % along with RO wastewater. Germination percentage, mean germination time, shoot length, root length and fresh weight were recorded seven days after sowing and analyzed statistically. Significant differences were found among treatments on germination percentage, shoot length, mean germination time, root length and fresh weight at level $p < 0.05$. All the examined parameters decreased with the increasing percentage of RO rejected wastewater, except mean germination time and root length. *Amaranthus* and maize performed well from the combination of 40% wastewater and 60 % purified water. Meanwhile, combination of 20 % wastewater and 80 % purified water showed positive effect on the germination of cabbage and green gram. The results indicated that the possibility of using RO rejected wastewater as part source of irrigation water. Further filed studies needed to recommend the usage of RO rejected wastewater as part of irrigation water.

Key Words: Dilution, Germination parameters, Irrigation, RO, Wastewater