CONCENTRATE OF REVERSE OSMOSIS PLANT AS A SOURCE OF IRRIGATION WATER: CASE STUDY AT THAMBALGOLLAWA VILLAGE IN ANURADHAPURA DISTRICT

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Reverse osmosis (RO) plants are the most effective drinking water treatment method, used for supplying safe drinking water to the chronic kidney disease of unknown etiology (CKDue) affected areas in the North Central Province. The rejected water from the RO plant is known as the concentrate, which is normally released to the environment without any beneficial use. An experiment was conducted in a farmer field adjacent to the RO plant installed in Thambalagollewa to study the possibility of using concentrate of RO plant as a source of irrigation water. Treatments were arranged in Split Plot Design with three replicates. Irrigation treatments as RO concentrate (I_1) and agro well water (I_2) were considered as the main plots and brinjal (C_1), chili (C_2) and bare soil (C_3) were considered as sub plots. Soil samples were taken before planting and after harvesting to study pH and electrical conductivity (EC) changes of soil. Plant growth parameters were measured during the growing stage and of 50% flowering stage. Water quality of both concentrate and agro well water were measured. All data were analyzed using statistical analysis system. Growth parameters and yield showed that there was no significant difference *($p>0.05$)* between irrigation treatments. Soil analysis revealed that, both irrigation treatments significantly enhanced the EC of soil compared with prior to the cultivation. Concentrate has significantly enhanced *($p<0.05$)* EC of soil compared to the agro well water. Sodium percentage, residual sodium carbonate and sodium absorption ratio showed that both waters were good for irrigation. However, salinity level of concentrate (2.153 dS/m) and agro well water (1.230 dS/m) showed that, both waters are doubtful for use as irrigation water. Therefore, it can be concluded that, there is a possibility of using of concentrate of RO plant as an irrigation source for both brinjal and chili crops. However, remedial measures should be taken to control further increase of soil salinity due to both concentrate and agro well water.

Keywords: Agro well, Concentrate, Growth parameters, Reverse osmosis