



RESEARCH PAPER

Impact of wastewater irrigation on physical health of soil and yield of marigold (*Tagetes patula* L. cv. Pusa deep)

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Abstract : A field experiment was conducted to find out the impact of wastewater irrigation on physical and microbiological soil health in marigold (*Tagetes patula* L. cv. Pusa deep) based on FDR sensor at Water Technology Centre farm of ICAR-Indian Agricultural Research Institute, New Delhi during period of 2020-2021. Eight treatments T-1: Groundwater irrigation scheduled at 25% MAD ($\theta_v=27\%$); T-2: Groundwater irrigation scheduled at 50% MAD ($\theta_v=22.5\%$); T-3: Groundwater irrigation scheduled at 75% MAD ($\theta_v=18\%$); T-4: Groundwater irrigation scheduled as per farmers practice/recommended POP; T-5: Wastewater irrigation scheduled at 25% MAD ($\theta_v=27\%$); T-6: Wastewater irrigation scheduled at 50% MAD ($\theta_v=22.5\%$); T-7: Wastewater irrigation scheduled at 50% MAD ($\theta_v=18\%$); T-8: Wastewater irrigation scheduled as per farmers practice/recommended POP were laid out in a Randomized Block Design (RBD) with three replications. Results indicated that soil physical properties such as bulk density, saturated hydraulic conductivity and porosity at both the soil depths of 0-15 and 15-30 cm in marigold were significantly not changed due to application of wastewater irrigations scheduled at various range of MAD and with the use of FDR sensor. Significantly higher population density of faecal coliform bacteria was observed in treatment plot T-7 where wastewater irrigations were applied at MAD 50% as compared to groundwater irrigations. Moreover, the yield of marigold came to be high in wastewater irrigated plots compared to groundwater. Thus, short-term application of wastewater has less impact and the different ranges of MAD can be used for further studies.

Key Words : Wastewater, Marigold, Allowable deficit, FDR

View Point Article : Machnoor, Aditya V., Gurjar, D.S., Rosin, K.G., Shekhawat, K. and Tiwari, A.K. (2023). Impact of wastewater irrigation on physical health of soil and yield of marigold (*Tagetes patula* L. cv. Pusa deep). *Internat. J. agric. Sci.*, **19** (2) : 535-540, DOI:10.15740/HAS/IJAS/19.2/535-540. Copyright@2023: Hind Agri-Horticultural Society.

Article History : Received : 21.02.2023; Revised : 07.04.2023; Accepted : 15.05.2023

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