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Assessment of Heavy Metals in Irrigation Water Collected from Various Vegetables Growing Areas of Swat Valley

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Abstract : The water of poor quality used for irrigation purposes has the potential to be the direct source of contamination and a vehicle for spreading contamination in the field. A number of wide-ranging review articles have been published that highlight irrigation water as a source of heavy metals toxicity which leads to chronic diseases in the human body. Here a study was planned to determine the microbial and heavy metals status of irrigation water collected from various locations of district Swat in various months. The analyses were carried out at the Environmental Horticulture Laboratory, Department of Horticulture, The University of Agriculture Peshawar, during the year 2018 – 19. The experiment was laid out in Randomized Complete Block Design (RCBD) with two factors and three replicates. Factor A consist of different locations and factor B represent various months. The result of heavy metals concentration in different regions, maximum Lead, Cadmium, Chromium, Nickel and Copper (4.27, 0.56, 0.81, 1.33 and 1.51 mg L-1 respectively) were noted for the irrigation water samples collected from Mingora while minimum Lead, Cadmium, Chromium, Nickel and Copper concentration (2.59, 0.30, 0.27, 0.40 and 0.54 mg L-1 respectively) were noted for the samples of matta. Whereas results of heavy metals content in irrigation water samples for various months maximum content of Lead, Cadmium, Chromium, Nickel and Copper (4.56, 0.63, 1.15, 1.31 and 1.48 mg L-1 respectively) were noted for the samples collected in Jan/Feb while lowest values for Lead, Cadmium, Chromium, Nickel and Copper (2.38, 0.24, 0.21, 0.41 and 0.52 mg L-1 respectively) were noted in the samples of July/August. A significant interaction was found for all the studied parameters. It was concluded that the concentration of heavy metal was maximum in irrigation water samples collected from the Mingora location during the month of Jan/Feb because Mingora is the most polluted area as compared to other studied regions, whereas the water content in winter goes to freeze and mostly contaminated water is used for irrigation purposes.

Keywords : irrigation water, various months, different regions, heavy metals contamination, Swat
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