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revista.tyca@gmail.com

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Carrera-Villacrés, David Vinicio; Ortega-Escobar, Héctor Manuel; Ramírez-García, Jazmín;
Ramírez-Ayala, Carlos; Trejo-López, Carlos; Becerril-Román, Alberto Enrique
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Resumen

Urban industrial water for irrigation—generated in the Zahuapan-Atoyac hydrographic system, located in the States of Tlaxcala and Puebla—is used to satisfy the requirements of irrigation for agricultural areas. This water originates from the overland flow of the mountains of Tlaxco and Calpulalpan, in the vicinity of Panzocola, Tlaxcala. The Zahuapan and Atoyac rivers receive affluents from numerous populations from the valley of Tlaxcala and Puebla. The aim of this work was to determine the salinity, the infiltration problems, and the toxic ions of the water in order to understand their effect on the physical properties of soil and crops. Non-experimental descriptive cross-sectional research and a sampling trial were used on 42 stations in the winter of 2006 and on 48 in the spring of 2007. Thirteenth measurements were determined in every water sample for: cations and anions, pH, electrical conductivity (EC), osmotic pressure (OP), phosphates and boron. The sodium absorption ratio (SAR) and its respective modifications (SAR, SAR_{aj}, and SAR_o) were calculated EC at the source was 115 to 400 S cm⁻¹ and after receiving industrial urban flows, their values were from 500 to 2 100 S cm⁻¹. Bicarbonate concentration went from 0.55 to 16.5 mmol c L⁻¹ and accounted for > 50% with respect to total anions. pH values ranged from 6.5 to 9.3. Maximum phosphate and boron values were of 7.89 and 1.84 mg L⁻¹, respectively. Thus, the salinity of the hydrographic system is due to anthropogenic contribution.

Palabras clave

cation exchange capacity, eutrophication, sodic water, SAR, ESP.

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