

Heavy metals in sediments associated with anurous assemblies in agroecosystems of North Argentine

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Heavy metals come from anthropogenic sources, agricultural and industrial, constitute a danger to aquatic biota and are used as an indicator of environmental deterioration. In agroecosystems that use pesticides, surface accumulation occurs by drift and runoff at lower levels of land that are appropriate spaces for the anurans' reproductive activities. Thus, heavy metals usually accumulate in surface sediments and generate an environment of chronic toxicity. The study was carried out at the Experimental Agricultural Station INTA Salta, Cerrillos, pcia. Of Salta, located at 24 ° 53'45"South and 65 ° 27'51"West at a height of 1240 meters. The annual average temperature is 23.8 ° C, the annual variation of the average temperature, corresponds to the "continental" type, with the maximum in the month of December and the minimum in June. The average annual temperature of the soil at 0.10 m. Of depth is 20.4 ° C. The annual distribution of the precipitations indicates the existence of a rainy season between October and April, that concentrates 90% of the precipitations and another one dries the rest of the year, with 720 mm. Of annual rainfall. The soils are of little development of horizons, corresponding to Inceptisols, Ustocrept udico, Series Cerrillos, of alluvial origin, well drained, developed on medium to fine textures, free to loamy loam, poor in organic matter and nitrogen. Soils of fluvio lacustrine origin, rich in silt and weak aggregation. Amphibians have been able to exploit the resources provided by agroecosystems and remain in a metapopulation system within an altered landscape. However, there is a tendency to decrease the density and diversity of amphibians in highly disturbed areas. Some authors suggest that changes in the patterns of amphibian diversity that inhabit agricultural landscapes allow inferring the depopulation of species less tolerant to environmental transformation associated with intensive and sustained agricultural activities over time. In Argentina, the information linking the presence of heavy metals and their influence on population and community parameters in anurans is limited due to the methodological complexity that makes it difficult to test hypotheses. We evaluated a community parameter, species richness (r) as a first indicator of environmental quality, comparing two environments. Both sites were differentiated by the type of crop to which they were destined (fruit and tobacco), differential agronomic management, while they were similar with respect to the hydrological regime and soils. The samples to analyze the anuran assembly in each of the environments consisted of standardized techniques of audio strip transects (AST) and visual encounter surveys (VES) during two breeding seasons in an agroecosystem in the province of Salta, Argentina. Likewise, samples of soils composed of 20 pikes were taken in a transect, separated 5 m. Between each pique, to a depth of 0 to 5 cm. Chromium (Cr) was evaluated; Nickel (Ni); Copper (Cu); Cadmium (Cd); Manganese (Mn); Magnesium (Mg) and Aluminum (Al) in an accredited external services laboratory, using Atomic Absorption Spectroscopy. The results indicate significant differences in the species richness between the two sites ($\chi^2 = 4.55$) and an increase in the heavy metal concentration of the Treatment (tobacco) with respect to the Witness (fruit trees) + 52.38% in (Cr); + 21.43% in (Ni); + 155.56% in (Cu); + 100% (Cd); + 12.9% in (Mg) and + 51.31% in (Al). The Treatment had 63.6% fewer species than the Witness, with a similar landscape conformation.

Key words: fruit trees, tobacco, soil, wealth, indicator, pesticides.