

Evaluación del contenido de cadmio en suelos destinados al cultivo de cacao en la provincia de Guayas (Ecuador)

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ABSTRACT

Cadmium is a heavy metal that causes serious damage to human health. Its natural or anthropogenic occurrence in water and soil is subject of concern due to the possibility of accumulation in food, this includes cocoa, which is one of the main export products of Ecuador. In

order to find the optimum depth of sampling to determine the concentrations of cadmium and nutrients in crops of cocoa areas, samples were taken and analyzed soil from agricultural land of six organizations that conform "La Asociación de Unión de Organizaciones Campesinas Cacaóteras (UNOCACE)", in the province of Guayas. The most relevant physico-chemical characteristics of the soil samples (at different depth ranges) and their cadmium content were determined. In total, were taken and analyzed 897 composite soil samples. Almost all of the samples showed concentrations of total cadmium below 0.4 ppm, meeting the criteria established by the Ecuadorian environmental legislation (0.5 ppm); only in an organization located in the canton Naranjal, an average value above the legal standard (0.62 ppm) was determined. It was observed that the highest concentrations of cadmium in the samples were on a superficial depth range (0-20 and 20-40 cm), which seems to suggest that the metal is associated with the organic matter. The information obtained can provide a background for future studies that should assess the bioavailability of cadmium in the soil.

Keywords: Bioavailability, cadmium in soils, cocoa production, Ecuador, heavy metals.

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