

MONITORING OF PESTICIDES RESIDUES IN SURFACE WATERS AT RIBEIRA VALLEY, SÃO PAULO STATE, BRAZIL

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Ribeira Valley is located in south-east part of São Paulo State and is characterized as the largest environmental protected area and the worst development human index of this state. Banana is the main crop production in this region. For control of Black Sigatoka and nematodes, different classes of pesticides are intensively used [1]. To assess the environmental contamination by agricultural practices, pesticides residues were monitored in small streams, surface waters, close to Registro at Ribeira Valley [2]. The Pesticides Impact Rating Index (PIRI) [3] software was used to identify which pesticides used on banana crops had the highest risk to contaminate surface waters, according to the results obtained from PIRI simulation the pesticides monitored were azoxystrobin, carbaryl, carbofuran, diuron and tebuconazole. Two sampling points were settled at draining channels, near to banana crops, and one sampling point at the Ribeira River. The water sampling was monthly, from February to December, 2008. Pesticides residues were extracted by solid-phase extraction [4] and quantified by HPLC-UV. The data were confirmed by GC-MS/MS. Of the total of water samples, 78 of them (68.4 %) showed pesticides residues, in concentration higher than the limits established by Economic European Community [5]. Analyzing the results, carbofuran and tebuconazole were the active ingredients quantified in a larger sample number, ie, carbofuran was quantified in 69.7% of the samples, while tebuconazole was found in 15%. The concentration of carbofuran ranged from 1.0 µg L⁻¹ to 18.8 µg L⁻¹, and to tebuconazole varied from 1.0 µg L⁻¹ to 4.2 µg L⁻¹. Considering the rainfall period, the highest percentage of carbofuran (60.9%) and tebuconazole (76.5%) was detected in the dry season, between May and September. Results of the monitoring program indicated the need to implement the Good Agricultural Practices (GAP) and Integrated Pest Managements (IPMs) to reduce impacts of agriculture practices on banana crops at Ribeira Valley.

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