

## VARIABILITY MAPPING OF TEBUTHIURON SORPTION-DESORPTION IN AGRICULTURAL SOILS

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**Destaque:** The spatial distribution of retention process of tebuthiuron in the soil was affected by geographic position in the area.

**Resumo:** The understanding of the interaction between soil physicochemical attributes and herbicide behavior is fundamental for optimizing the efficient use of PRE-emergence herbicides in a more sustainable approach. However, it is still poorly studied within precision agriculture area. Thus, this research focuses on evaluating the correlation of soil physicochemical attributes with the sorption and desorption processes of tebuthiuron to support application maps considering the field level variability. An agricultural area (sugarcane) of about 18 ha located in Anhumas-SP, with soil textural variability was chosen for the study. Forty georeferenced soil sampling points were used for collection of samples, each composed of 12 subsamples at 0 - 20 cm depth. Tebuthiuron was applied at dose of 1.000 g a.i. ha<sup>-1</sup> corresponding to the maximum doses recommended for the sugarcane field. The soil samples had their physicochemical attributes analyzed, and were submitted to sorption and desorption studies of <sup>14</sup>C-tebuthiuron using the batch equilibrium method. Geostatistical analysis was applied on the dataset containing soil attributes and herbicides retention variables using the program Vesper 1.6. The values of sorption and desorption apparent coefficients (Kd), sorption and desorption percentage and bioavailability were correlated with soil attributes by Pearson's correlation. The Kd values of tebuthiuron sorption ranged from 1.2 to 2.9 mL g<sup>-1</sup>. For desorption of tebuthiuron, Kd values ranged from 3.4 to 4.4 mL g<sup>-1</sup>. A positive correlation among clay content, soil organic matter (OM), and tebuthiuron sorption Kd values were found. This herbicide had variable retention according to geographic position in the area. The recommendation of application of PRE herbicides, such as tebuthiuron, observing the physicochemical attributes of the soil is an alternative to increase efficiency in weed control and decrease the risk of environmental contamination.

**Palavras-chave:** pre-emergent herbicide; variable application rate; application economy; retention ; availability

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