



## **Guidelines for soil conservation in the State of São Paulo (Brazil) using the index Lifetime soil.**

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Soil depth is directly related to its conservation and agricultural productivity and rates of soil loss in agroecosystems are generally much larger than that of its formation .

In this context, the Index Lifetime soil is a concept able to estimate the remaining time in years for the situation to permanent degradation of the soil is reached. This index provides diagnostics and quantitative results obtained from the current sediment loss by erosion. Therefore, from this concept, guidelines for conservation and land use that are defined according to its current state until its depletion can be prepared.

Methodologically, to the State of São Paulo was defined current soil loss by erosion through the Universal Soil Loss Equation, considering geomorphological and climatic factors. The input data used are land use map of the Department of Environment of the State of São Paulo, the Digital Elevation Model of Topodata Project, monthly precipitation data and pedological map of the State of São Paulo of the Agronomic Institute fo Campinas (IAC). The current soil loss given volume of soil in a given area and time interval was converted to soil thickness (depth). Thus, based on the average recovery rate of tropical soils 0.2 mm/year and a minimum depth of soil establishing critical thresholds for agricultural soil health and productivity of 50 cm, was determined as life time the soil has available, resulting in economic, conservation and food security contexts.

So from the map Lifetime obtained the State of São Paulo has been categorized in the following classes: 1) Conservation Areas, whose renovation rate of the soil is greater than the loss of soil, 2) Degraded Areas, where renovation rate of the soil is below the rate of soil loss; 3) Areas with life time zero, where the soil depth is less than critical depth of 50cm.

Therefore, the Lifetime Soil method is a suitable and operational criteria for implementing the sustainable planning of agricultural land use permitting planning horizons, with diagnostic value for evaluation of future scenarios .