

## PHYSICO-CHEMICAL PROPERTIES IN AN EXPERIMENTAL STATION THROUGH MULTIVARIATE AND SPATIAL METHODS

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- **ABSTRACT:** The spatial variability of physicochemical soil properties has large influence on the agricultural crops yields. Therefore, the main objective of this paper was to analyze the spatial variability of these properties, applying jointly, factor and geostatistics analysis. The data set was collected from an experimental area based on the Camantulul experimental station, Santa Lucía Cotzumalguapa, Guatemala. The soil samples were collected on a soil depth of 0.20 m, in a sampling grid with 49 points. The following physicochemical properties were measured: conductivity, power of hydrogen (pH), organic matter, calcium (Ca), magnesium (Mg), potassium (K), sodium (Na), phosphorus (P), copper (Cu), zinc (Zn), iron (Fe), manganese (Mg), field capacity, cation exchange capacity, permanent wilting point and soil bulk density. The data set was analyzed through descriptive statistics, followed by factor analysis. Geostatistics was used to verify and quantify spatial dependence of attributes - represented by the extracted factors. The factor analysis reduced the dimensionality of the problem, with a low-loss of information. Despite of this loss of information, the combination of factor and geostatistical analysis was efficient to quantify and determine the spatial dependence structure of the soil characteristics.
- **PALAVRAS-CHAVE:** Factor analysis; Geostatistics; Kriging; Soil; Spatial variability.

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