Geophysical Research Abstracts
Vol. 15, EGU2013-14176, 2013
EGU General Assembly 2013

Spatial variability of soil macronutrients in two cultivated areas with different sizes

Eva Vidal Vázquez (1), Rosane da Silva Días (1), Cleide Aprecida de Abreu (1), and Jorge Paz-Ferreiro (3)

(1) Facultad de Ciencias, Universidade da Coruña, 15008, Coruña, Spain, (2) Instituto Agronômico de Campinas, Barão de Itapura 1481, Caminas, SP, Brazil, (3) Departamento de Edafología, ETSIA, Universidad Politécnica de Madrid, Spain

Soil spatial variability is a naturally occurring and/or management induced feature that is important for site-specific management practices such as variable rate fertilization. The aim of this study was to assess the spatial variability of macronutrients (N, P, K, Ca and Mg) at two different landscape scales in a Coruña province (Northwest of Spain). Soil samples were taken from the topsoil of a 2.1 ha hillslope and a 24 ha agricultural catchment. Soil N, P and K availability were routinely determined, whereas Ca and Mg were determined after Mehlich-3 extraction. The statistical variability was significant with coefficients of variation ranging from 0.28 to 0.37 within the field at the hillslope and from 0.38 to 0.77 within the agricultural catchment. At the 2.1 ha field scale, N, P and K showed spatial dependence, whereas Ca and Mg didn't show it. At the 24.9 ha small catchment all five elements analyzed showed spatial dependence, so that spherical semivariograms were adjusted to the experimental data. The strength of the spatial variability was assessed by the nugget effect and the ranges of spatial dependence. When spatial dependence was evidenced, kriging maps were constructed. Kriging maps and maps made by conventional techniques were used to analyze similarities in the spatial distribution of the study nutrients.