



Zinc spatio-temporal variability in an acid rice soil

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The aim of this work was to assay the spatio-temporal variation of bioavailable zinc in an acid rice soil during different rice growth stages. The experiment was performed on a typical Plintacualf with two consecutive years under irrigated rice, in which 0, 625 and 1250 kg·ha⁻¹ dolomite were added. Three 11.9 x 20 m samplings were done, (seedling, tillering and flowering), and Zn-Mehlich-1 concentration was assayed. The lime doses produced positive effect on the zinc availability at seedling time, contrary to the negative effect of flood water (tillering and flowering), with available Zn decrease beneath the critical level in the control and 625 kg·ha⁻¹ dolomite parcels. The nine calculated experimental semivariograms, pentaspherical in four cases, spherical and circular in two and exponential in one case, for the different treatments and dates, reached a stable sill with low to moderate nugget effect. The range of the adjusted semivariogram models oscillated between 48 and 86 m in the control, 68 and 90 m with 625 kg·ha⁻¹ dolomite and between 61 and 62 m in the amended with 1250 kg·ha⁻¹. The cross validation test proved that the correlation between the kriging estimated and experimental values of available Zinc was always higher than 0.65. The available Zinc absolute errors mean was always lower than 0.015 mg·kg⁻¹, except for treatment with 1250 kg·ha⁻¹ in the first sampling, the adimensional mean square error values were close to the unit in most of the studied data sets. The kriging maps from the control and lime amended parcels showed lower contents of available Zn during the second sampling compared to the first one, and in the third compared to the second.