Identification and Characterization of the Expandable Clay Minerals and their Relationship with the Availability of Metals and Retention of K+ In Soils of the Parana River Basin. (S09-costa111507-Oral)

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Abstract:
Clay size fraction of 22 soil samples from oxisols, alfisols, mollisols and vertisols from southern of Brazil were selectively dissolved with dithionite-citrate bicarbonate (DCB) to remove the iron oxides and with boiling 5M NaOH to remove kaolinite and gibbsite. Solids residues of these chemical dissolution treatments were saturated with Mg, freeze dried and analyzed for specific surface area (SSA), cation exchange capacity (CEC), x-rays diffraction (XRD), thermal analysis (DTA), total chemical dissolution and potassium fixation. After the chemical treatments, independent of the soil, it was possible to concentrate the 2:1 clay minerals in more than 50%. SSA varied from than 200 m2/g to less than 50 m2/g and had a very good correlation with the CEC of the soils. Potassium fixation was observed in all samples and the average value was below 50% demonstrating that the major 2:1 clay minerals belong to the smectite group and not to the vermiculite. XRD confirmed these observations.

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