Cu Speciation and Extractable Cu in Variable Charge Soils from China Artificially Contaminated by Cu. (S11-yu101825-Poster)

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Abstract:

Fractionation and extraction of copper were studied in two Cu-enriched variable charge soils to evaluate the transformation and availability of added Cu. Copper addition increased amounts of all soil Cu2+ fractions including water soluble Cu2+(WS), MgCl2 exchangeable Cu2+ (Exch), weakly specifically adsorbed Cu2+ (Ad), Fe and Mn oxide bonded Cu2+ (Oxide), organically bonded Cu2+ (Org), and residual Cu2+ (Res). An equilibration among the six different Cu fractions was attained after 4-6 weeks' incubation. In the RAR soil (clayey, mixed siliceous thermic typic Dystrochrept), Exch-Cu, Oxide-Cu, Ad-Cu, and WS Cu were the dominant fractions, but the Exch-Cu, which increased steeply from Cu addition, was the highest. In the REQ soil (clayey, kaolinitic thermic plinthite Aquult), Oxide-Cu, Ad-Cu, and Exch-Cu were the dominant Cu fractions and the sum of these three fractions averaged 89.4%-91.4% of total added Cu. After 6 weeks' incubation, the amounts of extractable Cu to 0.1 mol L-1 HCl, Mehlich 3 and 1 mol L-1 NH4OAc were comparable which Cu was mainly derived from the fractions of WS-Cu and Exch-Cu in the RAR soil, and Exch-Cu, Ad-Cu, and Oxide-Cu in the REQ soil.

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