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10-9

Sequential Extraction of Copper and Zinc from Two Californian Soils.

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In order to understand how to remediate soils contaminated with heavy metals, it is important to first understand their sorption mechanisms. The objective of this study was to evaluate the bioavailability of elevated levels of soil copper (Cu) and zinc (Zn) via sequential extraction. Elevated levels of Cu and Zn were added separately and concurrently to a Mollisol and an Entisol from the central coast of California. The exchangeable amount of Cu and Zn was then extracted from the sorbed amount via 0.1 *M* $NaNO_3$. The residual fraction was then extracted with 0.1 *M* sodium citrate ($NaC_6O_7H_7$) to determine if citrate removed any additional metals. Higher amounts of Cu (> 80 %) was sorbed than Zn (>64 %) for both soils. Cu was shown to inhibit Zn sorption to the Entisol, but not in the Mollisol, when the metals were added concurrently. Zn was more exchangeable in the Mollisol but less exchangeable than Cu in the Entisol. Citrate extracted significantly more Cu and Zn from the Mollisol than the Entisol. Both metals had a low bioavailability. Exchangeable and extractable Cu and Zn were 12-16 % and 3 – 6 % of the originally sorbed amount for the Mollisol and the Entisol. Citrate was able to desorb non-exchangeable Cu and Zn from both a Mollisol and an Entisol, thus, was an important extractant used in assessing the bioavailability of these metals.

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Back to National Student Research Symposium Contest Oral Session: I
Back to Z00 Students of Agronomy, Soils and Environmental Sciences (SASES)

Back to The ASA-CSSA-SSSA International Annual Meetings (November 12-16, 2006)