

## **Kolloquium des Institutes für Landschaftsökologie WiSe 22/23**

**18. Oktober 2022**

**18 Uhr c.t.**

**Online per Zoom**

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### **The remediation of heavy metals contaminated soils using combined application of biochar and nanoparticles**

The combination of biochar and nanoparticle has already been proved to be an attractive method in remediation of contaminated soils which prevents toxicity and leaching of heavy metals into water bodies. We investigated the immobilization and leaching of five heavy metals (Cd, Cr, Cu, Ni, and Zn) by a combination of almond and walnut shells in three different application rates (2.5%, 5%, and 10%) and two nanoparticles (nano-Fe and nano-clay) in an alkaline soil. The amount of heavy metal sorption by walnut biochar, especially at 5 and 10% rates, was higher than almond biochar. Moreover, the cumulative leaching data confirmed that over the whole period of the experiment biochar successfully reduced the leaching of all heavy metals and high biochar application rates were more effective than control and low rate (2.5%). Among the studied biochar, overall walnut biochar was more effective in immobilizing Cd, Cr, and Ni, while almond BC was more effective in immobilizing Zn. Application of nanoparticles in combination with biochar demonstrated synergistic effects and in particular, the combined application of walnut biochar and nano-clay has great potential for the immobilization of heavy metals in soil due to higher specific surface area compared to nano-Fe. Improvement of heavy metal contaminated soils is necessary to reduce the associated risks and biochar can make heavy metals less available to plants and reduce their environmental consequences.

Zoom-Einwahl: <https://wwu.zoom.us/j/67534596205>

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