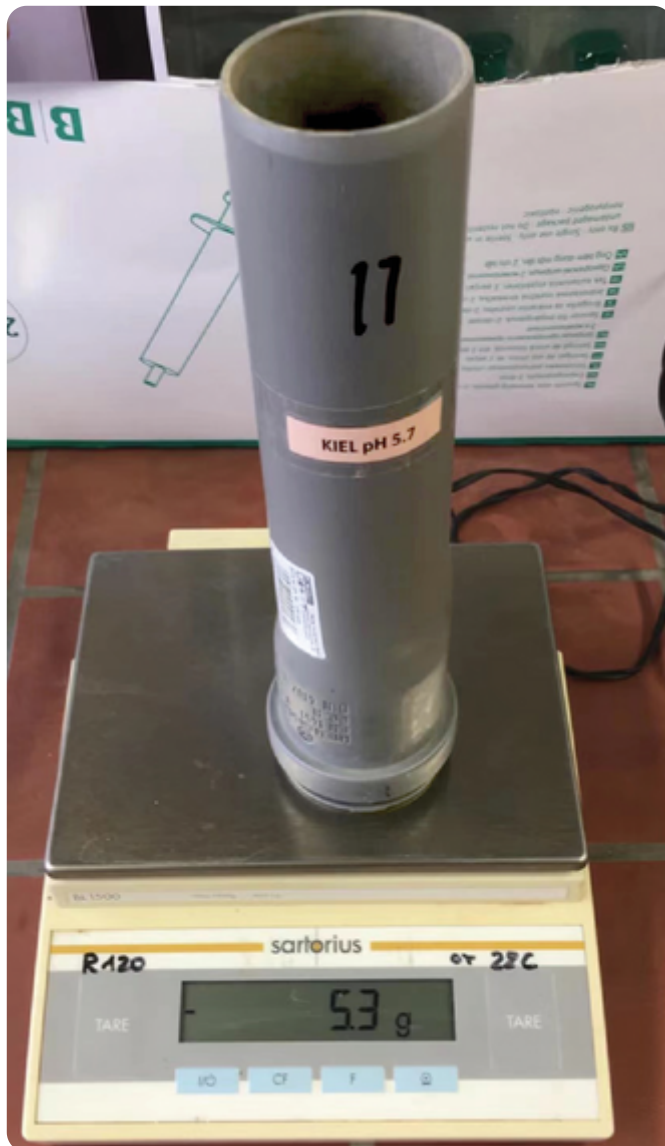




Science
Societies

Oxidized Biochar Improves Nitrogen Retention of Cattle Slurry

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Weighing a soil column. Photo by Xinyue Cao.

Livestock slurry as an organic fertilizer can provide nitrogen for plants and also increase soil organic matter and microbial biomass. However, it can lead to ammonia emissions and nitrite leaching, resulting in loss of fertilizer nitrogen and environmental pollution. Previous studies have shown that, due to its large surface area and the oxygen-containing functional groups on its surface, oxidized biochar has great potential to adsorb nitrogen and therefore mitigate nitrogen losses. However, its effectiveness in different soils treated with slurry is currently unknown.

As reported recently in the *Journal of Environmental Quality*, a research team conducted an 86-day laboratory incubation experiment in which untreated or oxidized biochar was co-applied with cattle slurry to three soils of contrasting texture, pH, and organic matter. The team found that oxidized biochar reduced ammonia emissions by 64–75% in all soils and had the potential to improve the quality of marginal and acidic soils.

These findings help transfer the application of oxidized biochar as a soil amendment to agricultural practices.

Adapted from Cao, X., Reichel, R., Wissel, H., & Brüggemann, N. (2022). Improving nitrogen retention of cattle slurry with oxidized biochar: An incubation study with three different soils. *Journal of Environmental Quality*, 52, 1– 12.

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