Soil Chemical Properties Beneath Swine and Cattle Waste Lagoons. (S11-desutter074225-Oral)

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Abstract:

Soil cores were collected beneath 10 to 20 year old dried cattle feedlot runoff lagoons (n=3) and one swine waste lagoon. Four cores were extracted from each lagoon using a direct-push coring machine to depths reaching 4 m. Soil cores were dissected and analyzed for texture, CEC, pH, total C, total N, and extractable ammonium-N, nitrate-N, P, K, Na, Mg, Ca, and Cl. Ammonium-N concentrations in the top 30 cm of soil ranged from 1087 mg/kg in the swine lagoon to 227 mg/kg in a cattle lagoon and generally decreased to levels less than 25 mg/kg in all lagoons near the bottom of the cores. About 70% of the inorganic N in the 3.3 m cores under the swine lagoon was retained in the top 1.5 m of soil. Olsen P levels also decreased from about 160 and 38 mg/kg in the top 30 cm of the swine and cattle lagoons, respectively, to near detection limits in the deepest samples. Other extractable cations also decreased with depth in all the lagoons. Chloride levels remained relatively constant with increasing depth in all lagoons but overall concentrations were highest in the cattle lagoons. Results indicate that the movement of lagoon liquor chemicals below the perceived soil liner is occurring.

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