Mineral Precipitates Responsible for Septic System Failure in Coarse-Textured Soils. (S05-lee143016-Poster)

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Abstract:

Properly functioning conventional trench septic systems rely on the hydraulic conductivity of the soil to disperse effluent in the soil absorption field. Typically, septic systems installed in coarse-textured soils function very well, but in the last decade 20% of septic system failures in Elkhart Co., IN occurred on Tyner loamy sand (mixed, mesic Typic Udipsamment). Upon excavation of a few of these failed septic systems, it was apparent that a mineral precipitate had formed adjacent to the trenches, apparently causing the absorption field to fail. Reducing conditions adjacent to the soil-trench interface resulted in migration of Fe and Mn away from the trench and reprecipitation under oxidizing conditions about 15 cm from the soil-trench interface. Iron oxides fill pores between the sand grains forming a continuous band about 5 mm thick. Further from the trench, manganese oxides are concentrated in a discontinuous and diffuse zone about 25 mm thick. Soil chemical conditions, mineralogical characteristics and processes involved in mineral formation will be discussed.

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