# Soil Changes Beneath White Pines Over 75 Years in Central Iowa. (S05-brevik082514-Poster)

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### Abstract:

Vegetation is one of the five commonly recognized soil-forming factors; therefore a significant change in vegetation should lead to corresponding changes in soil properties. However, the time required for changes to occur is not well understood. We investigated changes due to introduction of white pines (Pinus strobes) in a soil that originally formed under prairie grasses in an udic moisture regime. The pine stand covers an area of about 0.88 ha (2.2 acres) and was 75 years old when samples were collected in 1998. Soil profiles under the pines and under grasses were described and samples were collected for particle size, C, N, plant available P and K, and pH analysis. Additional intact clod samples were collected for thin section preparation and analysis. Profile descriptions revealed subtle differences in the horizonation of the two soils. Soil pH, N, and plant available K values were lower beneath the pines while C and plant available P values were higher. Clay content in the two soils was similar, but there was a suggestion of more clay redistribution beneath the pines. Micromorphology analysis suggests that biologic activity is much higher beneath the pines leading to better aggregation and increased total porosity. There is also evidence for drier conditions and stronger water oscillation beneath the pines, and biotite grains appear to be more weathered. In all, there appears to be more intense weathering conditions in the soil beneath the pines and a shift in soil properties from those of a grass-derived soil to those of a pine-derived soil. However, changes observed are slight; 75 years appears to be a short period for most soil attributes to be clearly changed.

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