Lamellae Genesis in a Semiarid Environment, Grand Staircase-Escalante National Monument. (S05-bell172921-Poster)

Authors:

- E.M.Bell* - *Utah State University/USDA-NRCS, Logan, UT*
- J.L.Boettinger - *Utah State University, Logan, UT*

Abstract:

Clay lamellae were documented in Navajo Sandstone-derived soils in a semi-arid environment on Wygaret Terrace, Grand Staircase-Escalante National Monument. We determined that lamellae occurrence was related to the interfingering of the Navajo and Kayenta Formations. Ground-penetrating radar data and auger observations showed the upper boundary of well-developed lamellae at about 1.2 m. A representative soil pedon and a weathered bedrock sample were selected for physical and chemical characterization. Soil pH was neutral to slightly acid, and OC, Fe-oxides, and CEC generally decreased with depth. However, OC and Fe-oxides were 7 to 4 times greater, respectively, in the lamellae than the overlying horizon. Loamy fine sand dominated the upper 57 cm, with fine sand below. However, lamellae and weathered bedrock were loamy fine sand and loamy sand, respectively, and the lamellae contained 8% more clay than the overlying horizon. Petrographic analyses of lamellae thin sections showed well-developed argillans. These data indicate a dominantly pedogenic origin for the lamellae, with fine material from the Kayenta Formation being essential to their formation.

Corresponding Author Information:

Erin Bell
Utah State University/USDA-NRCS
219 S 100 W
Hyrum, UT 84319

phone: 435-797-3404
fax: 435-797-2117
e-mail: erinbell@yahoo.com

Presentation Information:

Presentation Date: Monday, November 11, 2002
Presentation Time: 9:00-11:00 am
Poster Board Number: 1919

Keywords:
clay lamellae, micromorphology, semiarid soils, pedogenesis