



Pathology Biology Section – 2009

G69 The Effect of Soil Compaction on Pupation Depth of *Lucilia sericata* in Soil

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After attending this presentation, attendees will understand the effect that soil compaction has on the burrowing ability of post-feeding third instar larvae of *Lucilia sericata* (Meigen) (Diptera: Calliphoridae) searching for a pupation site.

When paired with information from post-feeding larval dispersal studies, this information will impact the forensic sciences community by aiding investigators in locating entomological evidence at a body-recovery scene.

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Locating the oldest insects that develop on human remains is crucial for accurate analysis of entomological evidence. If the remains are in a late stage of decomposition, fly larvae from the first sere of succession might have left the remains and pupated in the surrounding soil. If this has happened, a PIA estimate based on fly larvae collected from the remains will not accurately represent the post-CI. Therefore, investigators must be able to locate flies that have pupated in the soil to obtain an accurate post-CI.

In this study, post-feeding third instar larvae of *L. sericata* were allowed to burrow into soil of different compactions. After adult emergence, the depth in the soil of empty puparia was recorded. Time from egg to adult emergence also was recorded. Results from this research will generate a standard operating procedure for collecting fly puparia in soil at a body recovery scene, as well as evaluate development times of these insects in soil when using development data from previous laboratory studies.

The utility of *L. sericata* in forensic entomology has long been recognized. It is an early colonizer of decomposing remains, occurring in the first sere of succession. Due to its nearly cosmopolitan distribution, it has been widely studied in many locations worldwide, and can be considered a laboratory model for forensic entomology research. *Lucilia sericata* has been studied for its forensic implications in the context of temperature-related development, entomotoxicology, molecular identification, and now pupation behavior.

Entomology, Pupation, Soil