

## **Abstract**

Limited research is available with regards to decomposition processes of buried bodies, especially in South Africa, which has some of the highest murder rates worldwide. This study aimed to investigate the effects of endemic soil types, as well as mine tailings, which has not yet been investigated at all, on decomposition. The effects of soil pH were also noted, and the study was repeated during the warm and cold seasons to investigate the effects of weather and temperature holistically. A total of 30 piglet carcasses were buried approximately 10cm deep in containers filled with one of three soil types: dolomite, quartzite, and gold mine tailing. This experiment was repeated for the cold and warm seasons of South Africa, using 15 carcasses in each season. The carcasses were partially exhumed at regular ADD intervals (50ADD for the first 400ADD, and every 100ADD thereafter) to record their state of decomposition, capture photographs, and take soil samples. It was found that mine tailing soil promoted decomposition more than the other soil types, while quartzite restricted it the most. TBS-ADD equations with high correlation coefficients were generated for each soil type in each season. Significant differences were found between the rate of decomposition during the warm and cold seasons of South Africa in all soil types tested. Notable fluctuations in pH were observed in the quartzite and mine tailing specimens, while dolomite specimens' pH remained fairly consistent. The breadth of this research covers many unexplored aspects of subterranean decomposition in South Africa, and invites more focused investigation. It is hoped that the findings will be useful to forensic investigations involving buried remains in Gauteng province and South Africa.