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Evaluating Variability of Physico-chemical Properties of Soils from Urban Park of Tasik Permaisuri Cheras for Forensic Purpose

Nur Ain Najihah Bt Mohd Rosdi, Loong Chuen Lee*, Hukil Sino

Forensic Science Program, Centre of Diagnostic, Therapeutic & Investigative Studies (CODTIS), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur Campus, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur

Corresponding author: lc.lee@ukm.edu.my

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Abstract

Forensic soil analysis is commonly used to establish a link between soil collected from a suspect (known samples) and soil collected from a crime scene (questioned sample) (1). Taman Tasik Permaisuri is located about 7km from Kuala Lumpur, one of the capital cities of Malaysia. Being a densely populated residential place, the rate of crime reported is also high. Soil is one of the most common types of evidence encountered in various types of crimes (2). The understanding of the variability of soil of a place is of fundamental importance to assess reliable evidence on forensic investigations (3). Therefore, this work aimed to evaluate the physico-chemical variability of soils collected from the urban park of Taman Tasik Permaisuri. A total of 20 soil samples were collected from several proximate sites around the park. The pH of all the samples dissolved in distilled water were measured using a pH meter. Meanwhile, colour of the samples in dried and wet conditions were recorded based on the Munsell Soil Color Chart. The variability of the physico-chemical properties was first explored using levelplot and then assessed via one-way ANOVA test). Fig. 1 illustrates the variability of the 20 soil samples by pH and soil color observed under dried condition using levelplot. In overall, the soils were mainly slight acidic or neutral. The soils exhibited rather low variability in pH value despite the one-way ANOVA coupled with LSD test (Fig. 2) denoted that the samples can be divided into ten subgroups. In conclusion, the physico-chemical properties of soils collected from the urban park of Taman Tasik Permaisuri were rather homogenous with mild variability.

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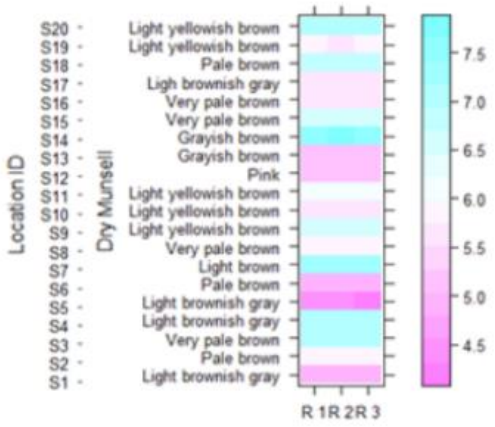

Figure 1: Level plot showing variability of the 20 soil samples by pH and colour observed under dry condition as reported according to the Munsell Soil Color Chart

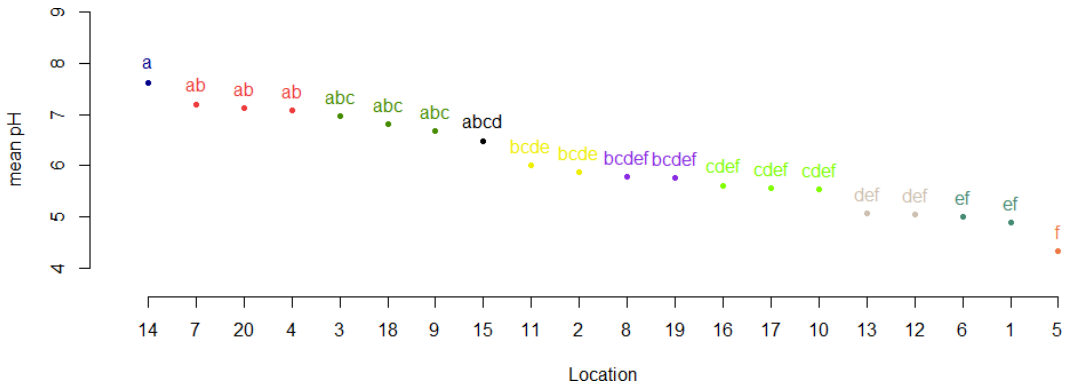

Figure 2: Plot showing one-way ANOVA LSD test results of pH data. Sample pair sharing the same alphabet denotes that they are significantly different from each other at significance level of 0.05 and otherwise denotes an insignificant difference.

Keywords
Forensic soil analysis, Levelplot, One-way ANOVA test, Physico-chemical

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References

1. Fitzpatrick, R. W. Soil: forensic analysis. *Wiley Encyclopedia of Forensic Science* 2009, 1-14.
2. Sangwan, P., Nain, T., Singal, K., Hooda, N. & Sharma, N. Soil as a tool of revelation in forensic science: a review. *Analytical Methods* 2020 43(12), 5150-5159.
3. Cheshire, K., Morgan, R. M. & Holmes, J. The potential for geochemical discrimination of single-and mixed-source soil samples from close proximity urban parkland locations. *Australian Journal of Forensic Sciences* 2017, 49(2), 161-174.