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Soil Color: A simple and free App to measure soil color

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Highlights

- Soil Color can be used to quantify various soil attributes;
- The objective of this study is to develop a free and simple app called “Soil Color”;
- The app determines soil color index using digital images.

Resumo/Abstract

Soil color is related to the physical, chemical, and biological composition of the soil[1]. By soil color using a portable chromameter, Konen et al. (2003)[2] have quantified organic carbon and texture. Using soil digital images, Morais et al. (2021)[3] have determined oxides contents in soil.

Moreover, soil color can also be used for classification[4], which it is of great value for soil use and management[5]. Generally, to classify the soil, several laboratories analysis are necessary, which are usually time-consuming, expensive, use toxic chemical reagents and generate large volumes of waste. On the other hand, other methods can be used, such as soil classification by determining its color. Han et al. (2016)[6] have proposed a method to classify soil by its color from digital images.

Given the importance of soil color, the objective of this study is to develop a free and simple app called “Soil Color” (available at: <https://play.google.com/store/apps/details?id=org.soilcolor.soilcolorapp>) to determine soil color index. Using this application, when taking a soil digital image, the index of the color channels: RGB, HSV and CMYK are determined. The app Soil Color was used to determine these color information from a soil sample, collected in Goiás. The Figure 1 shows the procedure for soil sample image acquiring using application developed.

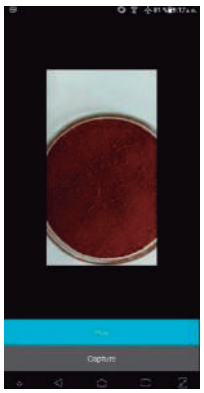

Figure 1. Image acquiring using Soil Color app.

After image acquisition, the average values of the RGB, HSV and CMYK color channels are determined automatically by the app, as shows in Figure 2.

Figure 2. Color Index calculated by Soil Color from Soil Image

Using these color index, in addition to other parameters, the soil sample was classified as latosol. Although the measurement of color indices is fast and simple, their determination is influenced by external light and the distance from the soil sample. In view of this, the user still needs to standardize the acquisition of images.

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