

***Coffea arabica* SPECTRAL SIGNATURE DETERMINATION AND COMPARISON BY TWO MEASUREMENT METHODS DURING THE LAST RAINY MONTHS AND DRY PERIODS IN COSTA RICA**

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RESUMEN:

Coffea arabica L. is one of the crops with highest levels of exportation in Costa Rica; therefore, research about its management and growth are very important for farmers. Coffee growth in plantations may be influenced by site conditions and plantation management, it can also be affected by different plagues and diseases, like the leaf rust caused by *Hemileia vastatrix* B. and Br. fungus. This project seeks to generate preliminary data to analyze coffee plantations affected by leaf rust, using field radiometry between climate periods in Costa Rica's. The spectral response of coffee plants has been measured with a FieldSpec HandHeld 2 spectroradiometer by two measurement ways: (A) adapted to a leaf clip and (B) adapted to a pistol grip. Simple random sampling has been applied in six coffee farms in the Central West Region of Costa Rica. Twelve plants are randomly selected from each farm, six plants are measured with method A, and the remaining six with method B. For Method A, twelve leaves are taken at the top, middle and lower sections, four leaves per section, of the crown. For method B, twelve samples per tree are captured at thirty centimeters of distance above the crown. The results include an average of reflectance using violet, blue, green, yellow, red and infrared ranges to determine statistical differences between the health states of the plant. The 900 and 680 wavelengths will be used to calculate NDVI index and determine differences between the sampled farms. Variance analysis and Tukey comparison test will be calculated using InfoStat software, for all cases.