

Characterization of Coffee Lands in Lavras, Minas Gerais, Brazil.**PA150**

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In Lavras, MG, Brazil, coffee production has great economic and social importance. Despite this fact, there is still a shortage of information regarding its spatial distribution, crop management and environment. The aim of this study was to carry out spectral monitoring of coffee lands and to characterize their environments using geotechnologies. Coffee fields with contiguous areas over 0.01 km² within a 564 km² region in the south of Minas Gerais state were selected for the study. Spectral data from the sensors OLI/Landsat 8, MODIS/Terra and the Shuttle Radar Topography Mission from 2014 to 2015 were obtained, as well as information on production areas, surface temperature, vegetation indexes, altitude and slope, were gathered and analysed. The results indicate that there is great variation in the NDVI values, with means ranging from 0.81 to 0.52. The altitude ranged from 900 to 1050 m, and the surface temperature from 19°C to 29°C. The altitude and the surface temperature distribution patterns were correlated with the vegetation indexes. The slope classes were very homogeneous, predominantly with declivities between 8 to 20%, characterized as wavy relief. This study made possible the characterization and monitoring of coffee lands and its results may be instrumental in decision-making processes related to coffee management. The authors would like to thank FAPEMIG and Consorcio Pesquisa Cafe for financing the work and for the research fellowships that made it possible.

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Geoinformation in the Domain of Coffee Production in Minas Gerais: Digital Maps, i3Geo, Web Mapping and Internet.

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This work presents the results achieved in a research project entitled “Geotechnologies for the integration, spatial evaluation, assessment and visualization of research data for coffee production in the state of Minas Gerais, Brazil”. The project aimed to integrate the results of research into coffee production in the state of Minas Gerais over a period of years and store it in a single geographic database in order to provide a tool to enable for the management of the available information and data, as well as producing new knowledge through its spatial analysis, and releasing the information online (Figure 1). The data was published on the website www.epamig.ufla.br/geosolos. The database is available for textual and spatial queries through i3Geo web mapping. The project’s main impact was to provide an integrated consulting environment that allows different sectors within the coffee production chain to access data, maps and information regarding coffee production, and its relation to the environment, in an innovative way. The authors would like to thank FAPEMIG and Consorcio Pesquisa Cafe for financing the work and for the research fellowships that made it possible.

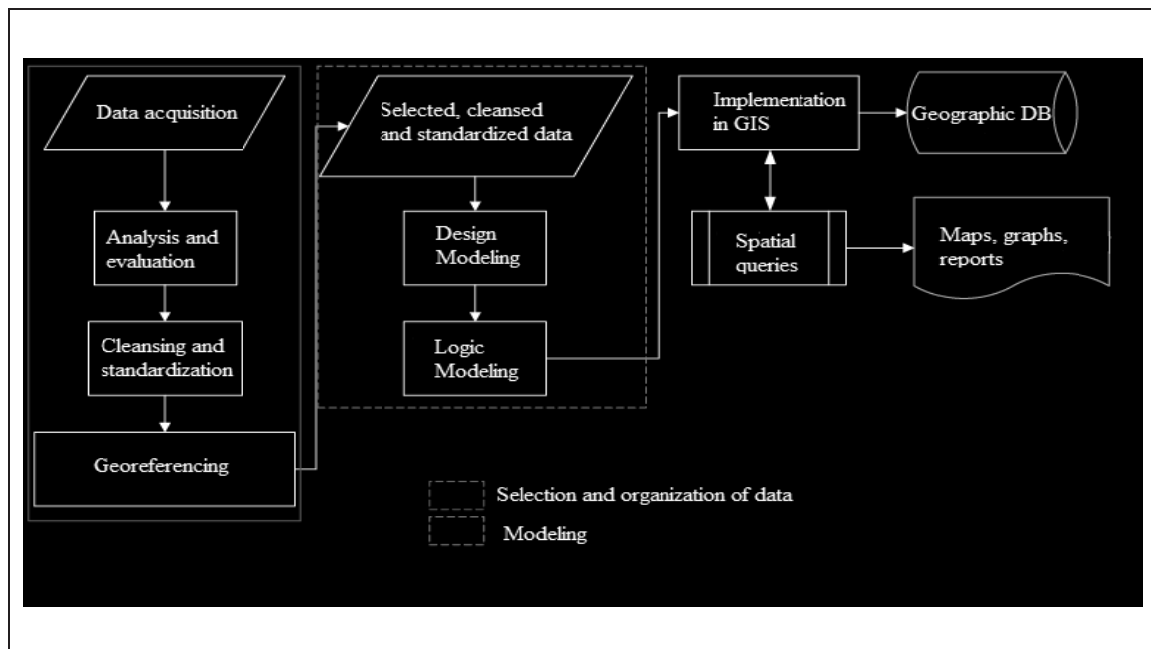


Figura 1: Fluxograma de atividades para criação do BDG.

PA152**Multivariate Analysis from Ecophysiological Responses of Coffee Plants Intercropped with Woody Species and Under Water Deficit.**

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The intercropping of coffee plants with woody species can change its ecophysiological interactions, causing impacts on water relations. These impacts may cause positive or negative physiological changes depending, among other factors, on climatic conditions. This study aimed to use multivariate analysis as a technique to characterize ecophysiological responses of coffee intercropped with woody species under water deficit in south region of Minas Gerais. The 'Catuaí Vermelho 99' was planted in monoculture and intercropped with *Khaya ivorensis*, *Tectona grandis* e *Acrocarpus fraxinifolius* in two plant spacings (9 x 13.6 m and 18 x 13.6 m) in the line of trees. The coffee assessments were performed in the second and third year after planting. Evaluations of spectral index, gas exchange, fluorescence and water potential were performed in August of 2014 and 2015. The physiological variables were analyzed by canonical variables analysis by R program. In August 2014 and 2015 higher water potential values (Ψ_{pd}) were found in coffee trees in monocultures and intercropped with *K. ivorensis*. The variables most positive score in the first canonical were Ψ_{pd} , water band index (WBI) and anthocyanin reflectance index (ARI1) and negative scores the non-photochemical quenching (qN). Monoculture were discriminated for presenting positive scores with high Ψ_{pd} , WBI and ARI1 values with low qN values, while intercropping coffee with *A. fraxinifolius* had negative scores, with high qN values and low values of WBI, Ψ_{pd} and ARI1. The variables with highest positive score in second canonical were carotenoid reflectance index (CRI1) and structure-insensitive pigment index (SIPI) and negative score were Ψ_{pd} , plant senescence reflectance index (PRSI), electron transport rate (ETR) and effective quantum yield of photosystem II (PSII). Coffee plants intercropped with *T. grandis* in closer spacing showed high values of CRI1 and SIPI indexes with low Ψ_{pd} values, PRSI, ETR and PSII, while opposing responses were found in coffee plants intercropped with *K. ivorensis*. In August 2015, trees reached Ψ_{pd} lower than in previous year. Based on CAN1, it was observed that Ψ_{pd} showed high positive score, while it was negatively correlated with PSII, ETR, flavonol reflectance index (FRI) and PRSI. It was observed that coffee plants under monoculture, intercropped with *K. ivorensis* and intercropped with *T. grandis* presented higher values for Ψ_{pd} , with lower values of PSII, ETR, FRI and PRSI. Moreover, coffee trees intercropped with the *T. grandis* in close spacing and *A. fraxinifolius* showed higher PSII, ETR, FRI and PRSI and lower Ψ_{pd} . Tree species influences the water potential of coffee plants in water deficit stage. The canonical variables allowed discriminating coffee monoculture, intercropped with *K. ivorensis* and *T. grandis* in wide spacing of coffee intercropped with *T. grandis* in close spacing and *A. fraxinifolius*, indicating a negative effect of intercropping with *T. grandis* in close spacing and *A. fraxinifolius* on water potential and also coffee photochemical efficiency.