PA165 — USING GIS IN THE SELECTION OF QUALITY *COFFEA CANEPHORA* IN NIGERIA

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Quality improvement *Coffea canephora* which accounts to 70% of coffee produced in Nigeria will help in enhancing its productivity. Coffee production in Nigeria had served as a source of income for rural farmers; however Abolition of marketing board has led to decline in the production of coffee due to scarcity of information about marketing of the commodity. Improved cup qualities in Nigeria Coffee would be a linkage to prosperous marketer with a specific preference to consumers demand. To make coffee production more sustainable in Nigeria, improved quality coffee plantations must be established. This study was aimed to obtain a coffee cultivation location for selection of quality coffee and subsequent establishment of coffee quality plantation.

Three coffee farm locations were mapped with ArcGIS 10.1 software to determine their altitude. The altitude of cultivated areas ranges from 522m to 207m above sea level, and Iyamoye in Kogi state has the highest (552m) altitude as compared to other two locations. This location may habour genotypes of coffee with high quality traits since high elevation improves the quality of the bean and potential cupping quality. These genotypes will further be analyzed for biochemical precursors of coffee cup quality.

Keywords: Quality, *Coffea canephora*, altitude, Nigeria, GIS

PA166 — MODIS EVI 2 SPECTRAL INDEX FOR MONITORING COFFEE ENVIRONMENTS IN THE SOUTH OF MINAS GERAIS.

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The monitoring and characterization of agricultural environments using remote satellite sensors are still underexplored by the productive sector in Brazil, despite evidence that vegetation orbital spectral indexes can be very useful in assessing the biomass, vegetative vigour and the hydric conditions of agricultural systems. The aim of this study is to understand the behaviour of the spectral vegetation index EVI 2 in different coffee areas in southern Minas Gerais and to create a database of spectral data to monitor these environments in space and time. The EVI 2 data were provided by LAF-INPE (Laboratory of Remote Sensing Applied to Agriculture and Forestry - National Institute for Space Research) and the monthly precipitation data were obtained on the Brazilian Ministry of Agriculture's website Agritempo. Coffee fields

surrounding existing meteorological stations in three municipalities (Lavras, Carmo de Minas and Machado), representative of the region's production sector, were selected. The study was carried out between 2002 and 2012. A correlation between EVI 2 and monthly precipitation was observed, although there was a delay in the response of the EVI 2 after precipitation events. Coffee fields located in Carmo de Minas had higher EVI 2 values than the areas in Lavras and Machado. The study showed the potential of the MODIS EVI 2 product in monitoring and characterizing coffee areas.

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<tr><td>PA167</td><td>EFFECT OF STEMS POPULATION DYNAMICS ON THE PRODUCTION OF COFFEE (Coffea arabica L.)</td></tr>
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EFFECT OF STEMS POPULATION DYNAMICS ON THE PRODUCTION OF COFFEE (Coffea arabica L.)

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Renewal by stumping is a common practice in which coffee growers leave several stems per site in order to increase production in their plots. To assess the population dynamics of stems with respect to a population of 10.000 stems.ha^{-1}, four dynamic ways of obtaining a final stem number were assessed in a production cycle of four harvests, changing the initial population by removing stems (thinning) after the first two harvests as follows: 20.000 to 15.000, 20.000 to 10.000, 15.000 to 10.000, and from 20.000 to 5.000 stems.ha^{-1}. The research was conducted in three experiment stations, Naranjal in Chinchiná-Caldas, El Tambo in Cauca and Santander in Floridablanca-Santander, in two spatial arrangements: 2m x 1m and 1m x 1m. A 5 blocks average was taken for each spatial arrangement as the gradient of soil fertility, and the response variable was the production of dry parchment coffee in kg ha^{-1}. The variance analysis under complete randomized design for each site and each spatial arrangement block, showed treatment effects in the stations of Santander and El Tambo for the 2m x 1m arrangement, and the Dunnett test indicated differences in cumulative production of dry parchment coffee (kg.ha^{-1}) between population dynamics of 20.000 to 5.000 stems.ha^{-1} and the 10.000 stems.ha^{-1}population. Under the former conditions, production fell by 25,3% in Santander and 32,0% in El Tambo. These results are a starting point for future research on the duration of the renewal cycles and on increased density strategies to improve crop productivity of coffee.