

Sugarcane productivity modeling using vegetation index

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The production of sugarcane is a highlight in an economic scenario in the state of São Paulo, Brazil, thus confirms it the largest producer and exporter of sugar and ethanol. For monitoring of this culture, in order to contribute to improvements in making and operational planning. However, conventional production and productivity of sugarcane are sometimes costly and estimates do not have high precision methods. In this sense, the work aimed at the development of mathematical models to explain the productivity of sugarcane through geoprocessing and remote sensing techniques associated to vegetation indices, used were the images of the satellite Landsat 8, with orbit / point 221/076. For the four analyzed indices the NDVI - Index of Vegetation by Normalized Difference, SAVI - Index of Adjusted Vegetation to the Soil, MSAVI-2 - Index of Modified Soil Adjusted Vegetation Index 2 and EVI- Index of Enhanced Vegetation Index, NDVI was promising to present a good correlation with productivity. The experiment was conducted in commercial area of Agrícola Rio Claro, partner of Zilor group, which is located on Lençóis Paulista and Pratânia, São Paulo State, Brazil of approximately 6000 hectares, with altimetry ranging between 600 and 700 meters. The results of the work, it was found that the modeling were satisfactory, varying the coefficient of determination between 0.15 to 0.97. Given that in periods with high coefficients of determination areas may be generally found in clusters, suggesting a lower incidence of variables. While in periods of low determination coefficients were obtained most likely due to other factors listed have occurred as a dispersion of the plots in the area, soil types, rainfall and varieties, probably different.

Keywords: Multiple linear regression, NDVI, MSAVI2, EVI, Landsat 8