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PLANT STRATEGIES THROUGH SPECTRAL PROPERTIES IN HERBACEOUS SPECIES OF CERRADO

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Vegetation indexes have been developed to access vegetation physiological traits, through leaf or canopy spectral measures. With the purpose of comparing herbaceous species physiological responses from spectra properties, we collected leaf spectra of four herbaceous species from two physiognomies of Cerrado (Cerrado "*senso strictu*" and Cerrado woodland). These physiognomies are taken as extreme environments in term of light exposure. We calculated four vegetation indexes (ARI, PRI, CRI1, RSVI) for each individual, and analyzed their variances using R software. The analysis showed that three indexes have their variance significantly different ($p<0.05$) between species in Cerrado *"senso strictu"* and PRI showed a significant difference between physiognomies. Only differences of ARI (Anthocyanin Reflectance Index) variance were not significant. Our results suggest that the species have different physiological strategies under different abiotic factors. Both CRI (Carotenoid Reflectance Index) and PRI (Photochemical Reflectance Index) can detect variations in carotenoid; being PRI one of the most successful index for stress and photosynthetic efficiency. Our slightly positive PRI values indicated a "low stress" level in plants, however, there is a significant difference between the photosynthetic efficiency of species in the different physiognomies. This low vegetation stress is also corroborated with negative RSVI (Red-edge Vegetation Stress Index) values, that is also associated with stress. In this case, the RVSI values between species are significantly different. This "low stress" may be related to the high values of CRI and ARI, which are related to photoprotective compounds carotenoid and anthocyanin pigments respectively. The studied physiognomies have different light availability for the herbaceous layer, which selects herbaceous plants with different strategies for dealing with excess or scarcity of light. Those differences reflect in their spectra in our analysis. Therefore, our results showed that those four species may have different strategies to deal with environmental pressures, mainly light exposure.

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