



Use of VIS-NIR spectroscopy for mapping specific management areas in Oxisols under sugar cane cultivation⁽¹⁾

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INTRODUCTION

The Diffuse Reflectance Spectroscopy (DRS) technique is an alternative method for soil attributes evaluation with a proven efficiency, low cost and environmental impact. Several studies, using different statistical methods, have shown that the selection of spectral bands or regions can help the performance of the models for soil attributes quantification. Hence, the objective of this study was to evaluate the spectral regions that allow discrimination between geomorphic surfaces (GSs) and soil attributes in mapping purposes for minimum areas of specific management.

MATERIAL AND METHODS

- Separation and identification of geomorphic surfaces;
- Soil samples were collected at transect every 25 m (100 samples) and by its sides (100 samples).
- Physical, chemical, mineralogical, magnetic susceptibility and diffuse reflectance spectroscopy analyzes were made in the soil samples;
- Data were analyzed by statistical and multivariate geostatistics methods.

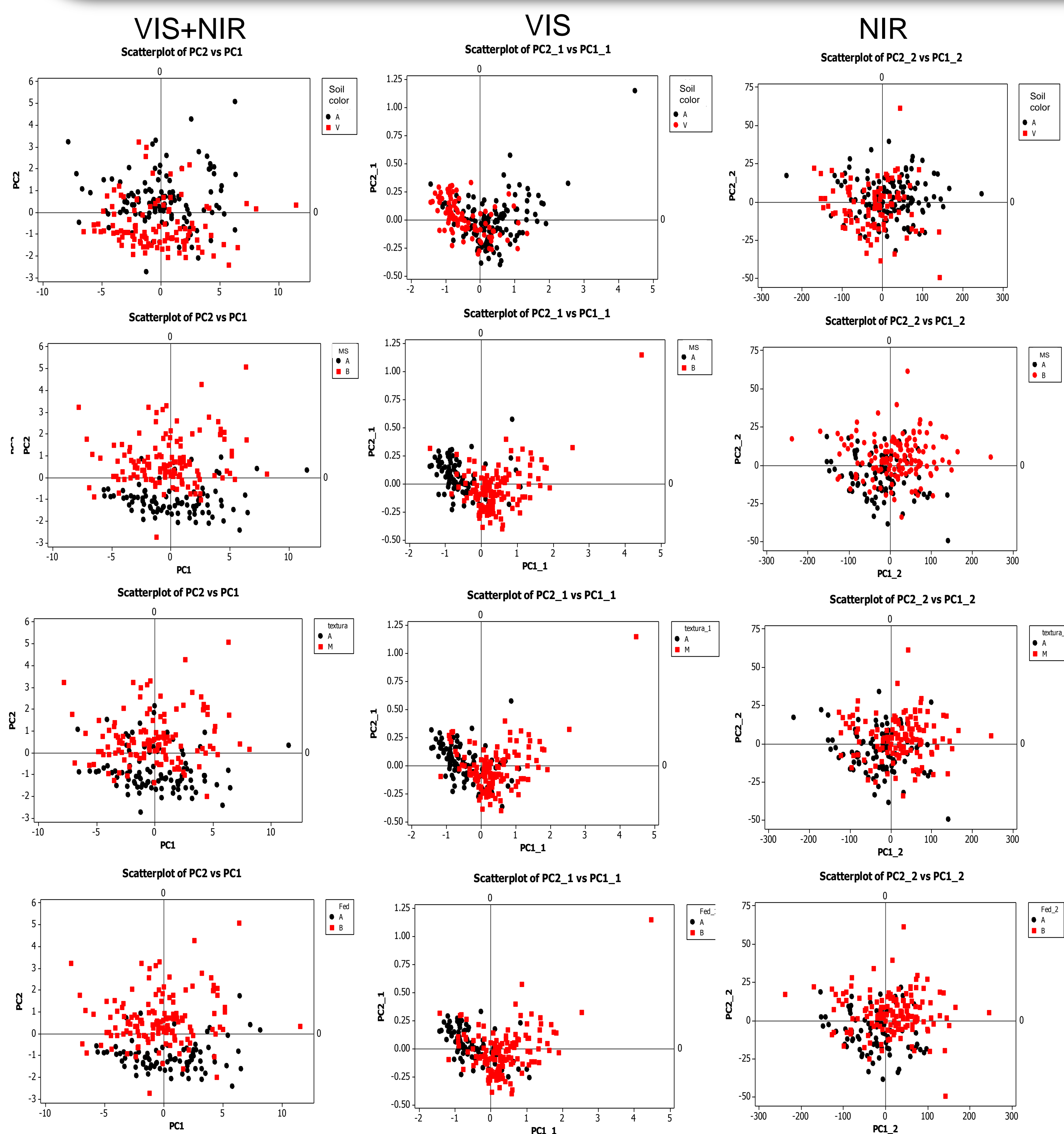


Fig. 1 - Graphic scores, PC1 versus PC2 of the spectrum in the visible + near infrared (VIS + NIR), VIS and NIR with the classes of the soil color A= $Gt / (Gt + Hm) < 0.25$, V = $Gt / (Gt + Hm) > 0.25$, magnetic susceptibility (MS) A= $MS > 0,500 \times 10^{-8} m^3 kg^{-1}$, B = $SM < 0.500 \times 10^{-8} m^3 kg^{-1}$, texture A = clayey ($> 35\%$ clay), M = medium texture ($< 35\%$ clay) and Fe extracted by dithionite-citrate-bicarbonato (Fed) A = $Fed > 4.5\%$, B = $Fed < 4.5\%$ (g, h, i) and activated. SG= geomorphic surfaces.

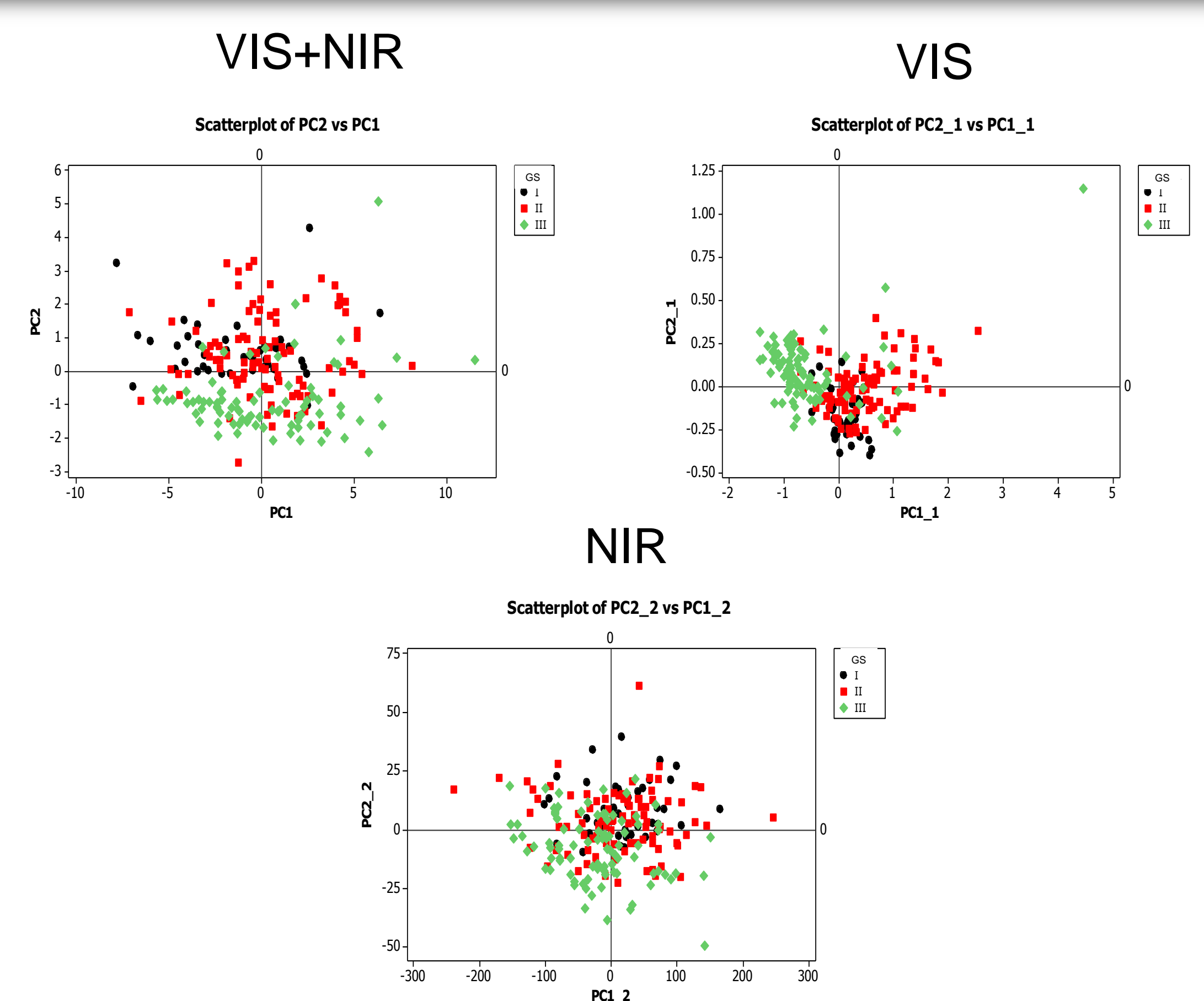


Fig. 2 - Graphic scores, PC1 versus PC2 of the spectrum in the visible + spectrum in the near infrared (VIS + NIR), VIS and NIR with the classes geomorphic surfaces activated.

CONCLUSION

The best spectral regions that allow to discriminate between geomorphic surfaces and soil attributes for minimum area of specific management mapping are the visible region and the entire spectrum.

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