

# FIRST DERIVATIVE IN NIR SPECTROSCOPY CALIBRATION FOR PROTEIN CONTENT OF FORAGES FROM HILL PERMANENT GRASSLAND

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## Abstract

The aim of this study was to perform a NIR calibration model for crude protein content determination of forages using first derivative of 294 spectra and chemical Kjeldahl values. The forages samples were harvested in June from hill permanent grassland (Grădinari, Caraș-Severin District), fertilized with sheep manure and/or mineral fertilizers. The annual average temperature in this region was around 10.4oC and the soil Calcic Luvisol. The fermented sheep manure was applied at each two years, while the mineral fertilizers yearly, since 2003. The matrix of floristic composition was established gravimetrically. PLS (Partial Least Squares) regression, implemented in Panorama program (version 3, LabCognition, 2009), was used to obtained the "NIR-CP" model. The statistical parameters ( $R^2=0.9303$ ; RMSEC=0.88; SD=3.11) and the differences between predicted and references values make promising this calibration model for practice evaluation of crude protein content for forages from grassland harvested in this period of year.

**Key words:** feed, infrared, quality, PLS regression, plants

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