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ABSTRACT

This study was undertaken to investigate the potential effect of moisture content (MC) on the prediction of organic carbon (C-org) and pH using visible (vis) and near-infrared (NIR) spectroscopy. The diffuse reflectance spectra of 270 samples collected from Turkey and UK were measured dry and wet of 5%, 10%, 15%, 20% and 25% gravimetric MC. Results obtained with the partial least squares (PLS) analysis for independent validation samples were successful for C-org (E_{RMSP}=1.04-1.40 and RPD=2.56-3.45) and rather poor for pH (E_{RMSP}=0.73-0.84 and RPD=1.38-1.60). The best results obtained for C-org were for dry samples (E_{RMSP}=1-04%; RPD=3.45), whereas the worst results were obtained for wet samples with 10% MC (E_{RMSP}=1.40%; RPD=2.56). The best results for pH were obtained for a MC of 10% soil (E_{RMSP}=0.73%; RPD=1.61). It was concluded that there was a clear effect of MC on the prediction of C-org and only a small effect on pH, since differences between models at different levels of MC were large and negligible for C-org and pH, respectively.