



NIRS prediction of biowaste properties

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Introduction

- Biowastes have great potential for soil amendment
- This requires characterizing their properties
- We tested NIRS for predicting the biochemical composition and degradability of biowastes

Materials & Methods

- 1000 samples from France, analyzed by Celesta-lab
- Representing 16 biowaste types (municipal sludges, green wastes, etc., possibly composted and mixed)
- 18 variables predicted by PLS (WinISI)
- Calibration using the most representative spectra
- Optimization of the calibration set size

Results & Discussion

- Good predictions of most variables describing organic matter and its quality (biochemical fractions, mineralized C, C/N ratios, stability index)
- Disappointing results for most N variables
- Reference methods:
 - some are questionable (cellulose VanSoest, N...)
 - standard error of laboratory not specified
- Some calibrations were possible using few samples (23 to 33% samples e.g. for lignin, hemicellulose & soluble fractions; mineralized C; total, Kjeldahl & organic N); the other properties required higher calibration intensities (50-63%)
- Best predictions with SNV & detrend and 2nd derivative, otherwise with SNV and 1st derivative

Conclusions & Perspectives

- To be improved before implementation
- Develop on-site spectrometry

